



# Tenth International Conference on Industrial Engineering and Operations Management

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**Dubai**, UNITED ARAB EMIRATES

MARCH 10 – 12, 2020

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## IEOM Society

"Achieving and Sustaining Operational Excellence"

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# IEOM Society International

# Welcome to the 10<sup>th</sup> Annual IEOM Society International Conference Dubai, United Arab Emirates

## To All Conference Attendees:

On behalf of the IEOM Society International, we would like to welcome you to Dubai, United Arab Emirates and the **10<sup>th</sup> Annual International Conference on Industrial Engineering and Operations Management**. This unique international conference provides a forum for academics, researchers and practitioners from many industries to exchange ideas and share recent developments in the fields of industrial engineering and operations management. This diverse international event provides an opportunity to collaborate and advance the theory and practice of major trends in industrial engineering and operations management. There were more than 700 papers/abstracts submitted from 60 countries, and after a thorough peer review process, approximately 470 have been accepted. The program includes many cutting-edge topics of industrial engineering and operations management. The theme of the conference is "**Operational Excellence in the era of Industry 4.0**".

This conference will address many of the issues concerning continuous improvement for quality and service. Our keynote speakers will address some of these issues:

- Dr. Mr. Osman Sultan, CEO of Emirates Integrated Telecommunications Company (du), UAE
- Dr. Oliver Elbracht, Vice President Siemens / Managing Partner Siemens Consulting Middle East, Dubai, United Arab Emirates
- Dr. Rubén Elvira Herranz, Services Program Manager, Airbus Defence and Space, Military Aircraft, Madrid, Spain
- Professor Ammar Kaka, Provost, Heriot-Watt University Dubai and Vice-Principal (Dubai), Heriot-Watt University, Dubai, UAE
- Dr. Ibrahim Alharkan, General Director for King Salman Institute for Entrepreneurship (KSIE), King Saud University, Riyadh
- Dr. Ali Diabat, Global Network Professor of Civil and Urban Engineering, New York University Abu Dhabi, UAE
- Dr. Nicklas Dahlstrom, Human Factors Manager, Emirates Airlines, Dubai, UAE
- Dr. Mohammad T. Khasawneh, Professor & Chair, Systems Science and Industrial Engineering, State University of New York at Binghamton, USA
- Harry Kasuma (Kiwi) Aliwarga, CEO and Co-Owner, UMG Myanmar, Indonesia
- Dr. Yousef Al-Assaf, President, Rochester Institute of Technology (RIT) – Dubai, Dubai Silicon Oasis, Dubai, UAE
- Prof. Dr. Bhaskar Bhandarkar, Director General, Institution for Innovation, Industrial Engineering & Entrepreneurship, Principal Investigator IUSSTF India, Former Chairman of IIIE
- Dr. Sayyad Zahid Qamar, Associate Professor, Mechanical and Industrial Engineering Department, College of Engineering, Sultan Qaboos University, Al-Khoudh, Sultanate of Oman
- Professor Charles Mbohwa, Pro-Vice Chancellor Strategic Partnerships and Industrialization, University of Zimbabwe

The 17<sup>th</sup> IEOM Society Global Engineering Education session will feature distinguished speakers who will discuss the workforce readiness and engineering education challenges and opportunities. The Industry 4.0 will showcase major topics including IoT, AI, data analytics, iCloud, cybersecurity, automation, digital manufacturing and MSV. Industry Solutions will showcase best industry practices as well as shared experiences. Six panel sessions have been planned. They are: Industry 4.0, Global Engineering Education, Supply Chain and Logistics, Lean Six Sigma, Women in Industry and Academia and Healthcare Improvement.

The IEOM Society would like to express our deep appreciation to our sponsors, university partners, organization partners, exhibitors, authors, reviewers, keynote speakers, panelists, track chairs, advisors, the local committee and the many volunteers who have given so much of their time and talent to make this unique international conference an overwhelming successful event.

University of Sharjah and Zayed University, conference hosts, welcome all participants to Dubai. The IEOM Society Conference Planning Committee hopes you will enjoy Dubai and all that it has to offer with its diverse culture, rich history and exceptional cuisine.

Lastly, our sincere best wishes to you all for a successful conference and an enjoyable stay in Dubai.

Enjoy the conference!



**Dr. Zain Tahboub**  
Conference Co-Chair  
Chief Advisor  
Dubai Aviation Engineering Projects  
Dubai, United Arab Emirates



**Dr. Mohammad Shamsuzzaman**  
Conference Co-Chair  
Associate Professor, Industrial Engineering and  
Engineering Management Department  
College of Engineering  
University of Sharjah, UAE



**Dr. Ahad Ali**  
Conference Co-Chair  
Associate Professor and Director of  
Industrial Engineering Programs  
Lawrence Technological University  
Southfield, Michigan, USA

# Conference Program

## March 8-9, 2020 (Sunday & Monday), 8:00 am - 5:00 pm: Lean Six Sigma Green Belt Certification Workshop

- SPEAKER: **Dr. Saso Krstovski**, MBB, Lean Manufacturing Coach /Six Sigma Master Black Belt, Van Dyke Transmission Plant, **Ford Motor Company**, Michigan, USA

## March 9, 2020 (Monday)

13:00 – 20:00 Conference Registration

## March 10, 2020 (Tuesday)

07:00 – 17:00 Registration

08:00 – 09:30 Parallel Sessions – Rooms 1-8

09:30 – 09:40 Welcome Address

09:40 – 10:20 Opening Keynote I: **Mr. Osman Sultan**, CEO of Emirates Integrated Telecommunications Company (du), UAE

10:20 – 11:00 Opening Keynote II: **Dr. Oliver Elbracht**, Vice President Siemens / Managing Partner Siemens Consulting Middle East, Dubai, United Arab Emirates – Ballroom

11:00 – 11:30 Networking Break at Exhibition Hall

11:30 – 12:10 Tuesday Keynote III: **Dr. Rubén Elvira Herranz**, Services Program Manager, Airbus Defence and Space, Military Aircraft, Madrid, Spain – Ballroom

12:10 – 12:50 Tuesday Keynote IV: **Professor Ammar Kaka**, Provost, Heriot-Watt University Dubai and Vice-Principal (Dubai), Heriot-Watt University, Dubai, UAE – Ballroom

13:00 – 14:30 **Buffet Lunch and IEOM Student Chapter Presentations** - KFUPM, Zagazig University, University of Johannesburg and University of Science & Technology of Fujairah (USTF), UAE – Ballroom

14:30 – 16:00 Parallel Sessions – Rooms 1-8

16:00 – 16:30 Networking Break

16:30 – 18:00 Parallel Sessions – Rooms 1-8

18:00 – 22:00 IEOM Global Council Meeting

## March 11, 2020 (Wednesday)

07:00 – 17:00 Registration

08:00 – 09:30 Parallel Sessions – Rooms 1-8

09:40 – 10:20 Wednesday Morning Keynote I: **Dr. Ibrahim Alharkan**, General Director for King Salman Institute for Entrepreneurship (KSIE), King Saud University, Riyadh, Saudi Arabia – Ballroom

10:20 – 11:00 Wednesday Morning Keynote II: **Dr. Ali Diabat**, Global Network Professor of Civil and Urban Engineering, New York University Abu Dhabi, Abu Dhabi, UAE – Ballroom

11:00 – 11:30 Networking Break at Exhibition Hall

11:30 – 12:10 Wednesday Keynote III: **Dr. Nicklas Dahlstrom**, Human Factors Manager, Emirates Airlines, Dubai, UAE

12:10 – 12:50 Wednesday Keynote IV: **Dr. Mohammad T. Khasawneh**, Professor & Chair, Systems Science and Industrial Engineering, State University of New York at Binghamton, USA – Ballroom

13:00 – 14:30 Networking Lunch Buffet

13:40 – 14:00 Wednesday Lunch Keynote: **Harry Kasuma (Kiwi) Aliwarga**, CEO and Co-Owner, UMG Myanmar, Indonesia

14:30 – 16:00 Parallel Sessions – Rooms 1-8

16:00 – 16:30 Break

16:30 – 18:00 Parallel Sessions – Rooms 1-8

18:00 – 20:00 Poster Session, High School STEM Competition, Sr. Design Poster Competition

## March 12, 2020 (Thursday)

07:00 – 17:00 Registration

08:00 – 09:30 Parallel Sessions – Rooms 1-8

09:40 – 10:20 Thursday Morning Keynote I: **Dr. Yousef Al-Assaf**, President, Rochester Institute of Technology (RIT) – Dubai, Dubai Silicon Oasis, Dubai, United Arab Emirates – Ballroom

10:20 – 11:00: Thursday Morning Keynote II: **Prof. Dr. Bhaskar Bhandarkar**, Director General, Institution for Innovation, Industrial Engineering & Entrepreneurship, Principal Investigator IUSSTF India, Former Chairman of IIIE – Ballroom

11:00 – 11:30 Networking Break at Exhibition Hall

11:30 – 12:00 Keynote: **Dr. Sayyad Zahid Qamar**, Associate Professor, Mechanical and Industrial Engineering Department, College of Engineering, Sultan Qaboos University, Al-Khoudh, Sultanate of Oman

11:30 – 13:10 Parallel Sessions – Rooms 1-8

13:00 – 14:30 **Buffet Lunch and IEOM Student Chapter Presentations** - MAPUA University, University of West Bohemia, Pilsen, P.D.A. College of Engineering, India, UNS, Indonesia and Shipbuilding Institute of Polytechnic Surabaya – Ballroom

14:30 – 16:00 Parallel Sessions – Rooms 1-8

16:00 – 16:30 Networking Break

16:30 – 18:00 Parallel Sessions – Rooms 1-8

19:00 – 22:00 CONFERENCE AWARD DINNER and Fellows Recognition – Ballroom

Awards Keynote - **Professor Charles Mbohwa**, Pro-Vice Chancellor Strategic Partnerships and Industrialisation, University of Zimbabwe, Mt Pleasant, Harare, Zimbabwe

## Keynote Speakers

Opening Keynote I - Tuesday, March 10 2020, 9:40 – 10:20 am

### Mr. Osman Sultan

CEO

Emirates Integrated Telecommunications Company, (du)

UAE

Title of Keynote address: *The Enablers of the Perfect Storm: The 4th Industrial Revolution*

As the founding CEO of Emirates Integrated Telecommunications Company (du) since 2005 in the UAE, and the founding CEO of Egyptian Company for Mobile Services (Mobinil) in Egypt from 1998 to 2005, Osman Sultan set during the course of his career several strategies translating the profound transformations that the telecom and information sectors have been creating in our lives. As an influential figure and a mentor in the telecommunications sector, he is proud to have groomed close to 20 talented individuals who became CEOs of various operations across all continents. Osman Sultan is a visionary leader and a notable public speaker in the field. His distinguished achievements ranked him as one of the most powerful executives in the telecoms industry in the world twice on «GTBPower100 List» in both 2010 and 2011. Osman Sultan brings 35 years of leadership, rich with achievements in the telecom business. His vast knowledge and expertise in the field as early as the pre-internet period, placed him as one of the pioneers in France, Europe, the USA, Japan and the entire MENA region.

Opening Keynote II - Tuesday, March 10, 2020, 10:20 – 11:00 am



### Dr. Oliver Elbracht

Vice President Siemens / Managing Partner Siemens Consulting Middle East  
Dubai, United Arab Emirates

As the Managing Partner for Siemens Consulting Middle East, Dr. Oliver Elbracht has a strong background in management consulting, digital and business transformation. During the course of his career, he gained deep consulting experience in business strategy & development, AI, Predictive Analytics, BDAA, digital transformation (tech & business), innovation, IT system design, e-commerce, sales & distribution, cybersecurity, greenfield operations. Through his research in computational physics, he has mastered a broad set of computer science knowledge & techniques including machine learning & algorithms, statistical models, and coding languages. Further, he has developed broad experience along the value chain in Telecommunication & Technology, IT, Infrastructure & Transportation, Government/Public Services, Automotive and Financial Services. He has been working in 15+ countries through international engagements in Europe (e.g. Germany, Austria, Sweden, Turkey), Middle East (e.g. Bahrain, Saudi Arabia, UAE, Kuwait, Qatar) and Asia (e.g. Taiwan, Indonesia, Myanmar, Hongkong, Kazakhstan).

11:00 – 11:30 Networking Break

Keynote III - Tuesday, March 10, 2020, 11:30 – 12:10 am



### Dr. Rubén Elvira Herranz

Services Program Manager  
Airbus Defence and Space - Military Aircraft  
Madrid, Spain

Dr. Rubén Elvira Herranz is teaching in various universities in Spain (Carlos III University in Madrid, Instituto de Estudios Bursátiles, Technical University of Madrid) and Business School (Institute for Advance Management – CEU) in the areas of Project Management, Operations Management, Finance and Geoconomy. As well he has published some of his works in top ranked journals.

In his professional life Dr. Elvira is Program Manager for Middle East in Airbus Defence & Space.

Dr. Elvira is holding a PhD in Business Administration, various MSc (Industrial Management, Business Administration, Machines and Transportation) and a Bachelor in Aerospace Engineering, all from various universities. Also is certified as PMP ©.

Keynote IV - Tuesday, March 10, 2020, 12:10 – 12:50 am



### Professor Ammar Kaka

Provost, Heriot-Watt University Dubai and Vice-Principal (Dubai), Heriot-Watt University  
Dubai, UAE

#### Transforming Construction through Smart Technologies

Professor Ammar Kaka is the Provost of Heriot Watt University Dubai Campus. Within Heriot Watt University, he holds the position of Vice Principal and the Professor of Construction Economics and Management. In 2008 he was also allocated the title the William Watson Chair of Building Engineering. Professor Kaka's contribution to the transnational education in general and to the Dubai's education hub in particular has been immense. With a student population of 4000 and a growing research culture, the Dubai campus is currently recognised as one of UK's leading provider of transnational education. Professor Kaka has an international reputation for research on the assessment, planning and control of construction projects. Author of more than a hundred research papers, he has held numerous funded research grants with impact demonstrated by the extent of citation and direct

industrial application. He is a fellow of the RICS and member of the editorial boards of a number of international academic journals. He has supervised more than 25 PhD students to completion, many of which have developed into senior roles in governments, industry and academia.

**Tuesday Lunch Buffet**, March 10, 2020, 1:00 – 2:30 pm

**IEOM Student Chapter Presentations – Ballroom**

KFUPM, Zagazig University, University of Johannesburg and University of Science & Technology of Fujairah (USTF), UAE

**Keynote I - Wednesday, March 11, 2020, 9:40 – 10:20 am**



**Dr. Ibrahim Alharkan**

Associate Professor at Industrial Engineering Department, College of Engineering  
General Director for King Salman Institute for Entrepreneurship (KSIE)  
Director of Applied Engineering Management Program (AEMP)  
King Saud University, Riyadh, Saudi Arabia

Ibrahim Al-Harkan, is an associate professor of industrial engineering at King Saud University, Saudi Arabia. He holds a B.S. in Industrial Engineering from King Saud University, M.S. and Ph.D. in Industrial Engineering from The University of Oklahoma, USA. His specialized areas are production planning and control, modeling and simulation of industrial and service systems, and applied operations research. Dr. Al-Harkan, is one of the founders of the Saudi Industrial Engineering Society (SIES), one of the founders of the Industrial Engineering Council at the Saudi Council of Engineers, One of the founders of the Saudi Chapter of Institute of Industrial engineers, and established the Department of Industrial Engineering at the college of Engineering in King Saud University. Dr. Al-Harkan was the Chairman for the Mechanical Engineering Department for three years and half, also the Chairman for Industrial Engineering Department for two years, in addition he was the dean for graduate studies for five years. Dr. Al-Harkan, was the Vice Rector Assistant for Graduate studies and Scientific Research for Knowledge Exchange and Technology Transfer for one year. Dr. Al-Harkan, was the General Director of External Joint Supervision Program (EJSP) for ten years. Dr. Al-Harkan, is currently the General Director for Entrepreneurship Institute (EI) which contains the Innovation Center (IC), Technology Advancement and Prototyping Center (TAP), Intellectual Property and Licensing Program (IPTL), Incubator and Accelerator Center (Khota), Small and Medium Enterprises Services Center (SMESC), and Funding Services Center (FSC).

**Morning Keynote II - Wednesday, March 11, 2020, 10:15 – 11:00 am**



**Dr. Ali Diabat**

Global Network Professor of Civil and Urban Engineering  
New York University Abu Dhabi  
Abu Dhabi, UAE

Dr. Ali Diabat is a Global Network Professor of Engineering at New York University Abu Dhabi. His research focuses on different applications of optimization and operations research: in particular, logistics and supply chain management, healthcare management, and production planning. He has published over 100 research journal papers and over 30 conference papers in leading journals and international conference proceedings, and his research has received about 5 million dollars of grant funding from different industries and collaborative proposals with academic institutions. Dr. Diabat has received several Excellence in Teaching awards, including an Outstanding Graduate Instructor Award and an Excellence in Teaching Award from Purdue University, in 2004 and 2006, respectively. He was the recipient of the 2012 Excellence in Teaching Award from Masdar Institute, and in 2014, he also received the Best Faculty Research Award from the Department of Engineering Systems and Management at Masdar Institute. Dr. Diabat currently serves as an Associate Editor of the Journal of Manufacturing Systems, an Area Editor of the Journal of Computers and Industrial Engineering, and an Engineering Editor of the Arabian Journal for Science and Engineering.

11:00 – 11:30 Networking Break

**Keynote III - Wednesday March 11, 2020, 11:30 am – 12:10 pm**



**Dr. Nicklas Dahlstrom**

Human Factors Manager  
Emirates Airlines, Dubai, UAE

**Well Done is Better than Well Said – Improving Safety and Efficiency with Human Factors**

Dr. Nicklas Dahlstrom is Human Factors Manager at Emirates Airline and has been with the airline since 2007. In this position he has overseen CRM training in a rapidly expanding airline and also been part of efforts to integrate Human Factors in the organisation. He has also done work for other organisations, especially the UN World Food Program's Aviation Safety unit and is currently a member of ICAO's Human Performance Task Force. In 2018 he received Civil Aviation Training magazine's Pioneer award for his work in the aviation industry. Nicklas also holds the position of Assistant Professor at Lund University School of Aviation in Sweden and was previously a researcher and instructor there, working mainly on projects related to safety and Human Factors in aviation as well as in other areas, such as maritime transportation and health care. Nicklas did his PhD with Professor Sidney Dekker as supervisor and worked with him on research projects until he joined Emirates. His research areas in aviation have been mental workload, training and simulation and he has written research

articles and book chapters on Human Factors and CRM as well as delivered invited presentations, lectures and training in more than twenty different countries. Previous to his career in academia and civil aviation Nicklas was an officer and meteorologist in the Swedish Air Force, where he also underwent flight training on the SAAB 105 twin engine trainer jet aircraft. He worked in the Swedish Air Force at the Air Base F10 in as well as at the Swedish Fighter Pilot School F5, where he was also an instructor for both pilots and meteorologists.

#### Keynote IV - Wednesday, March 11, 2020, 12:10 – 12:50 pm



##### **Dr. Mohammad T. Khasawneh, Ph.D.**

Professor & Chair, Systems Science and Industrial Engineering  
Associate Director, Watson Institute for Systems Excellence  
Director, Healthcare Systems Engineering Center  
Graduate Program Director, Executive Master of Science in Health Systems  
Thomas J. Watson School of Engineering and Applied Science  
State University of New York at Binghamton  
Binghamton, New York 13902, U.S.A.

Dr. Mohammad Khasawneh is a Professor and Chair of Systems Science & Industrial Engineering at Binghamton University. He received his Ph.D. in Industrial Engineering from Clemson University, South Carolina, in August 2003, and his B.S. and M.S. in Mechanical Engineering from Jordan University of Science and Technology, Jordan, in 1998 and 2000, respectively. Dr. Khasawneh's research is focused on healthcare systems engineering, operations management, and data science. Dr. Khasawneh currently serves as Associate Director for the Watson Institute for Systems Excellence (WISE), an institute for advanced studies that generates 2.5-3 million US\$ in research funds annually. In addition, he currently serves as the founding director of the Healthcare Systems Engineering Center, an organized research center (ORC) at Binghamton University.

Since 2003, Dr. Khasawneh has been leading a wide spectrum of projects with U.S. hospital systems that focus on applied research in the areas of healthcare systems engineering, operational excellence, and data science. His health systems engineering center generates over one million US\$ annually in sponsored research from various healthcare and hospital systems. Building on a successful research program and an academic concentration/minor, at the graduate/undergraduate levels, Dr. Khasawneh developed a 12-month Executive Master of Science with a Health Systems Concentration, which has been offered in Manhattan since 2013. He has also been instrumental in developing a new M.S. degree program in Healthcare Systems Engineering. Over the years, Dr. Khasawneh presented his research at various national and international conferences, including China, India, Mexico, Jordan, Korea, Thailand, Japan, Turkey, Indonesia, and Canada. Dr. Khasawneh's research activities thus far have led to 50+ refereed journal articles, 100+ conference articles, one patent, and two new invention disclosures. In addition, his sponsored research efforts thus far have resulted in over ten (10) million US\$ in external funding and over 39 million US\$ in software/equipment grants.

In 2006, Dr. Khasawneh received a U.S. Air Force Summer Faculty Fellowship to evaluate the use of multi-sensory cues to improve the landing of unmanned aerial vehicles. In 2009, he received another fellowship from the U.S. Air Force Office of Scientific Research to design ergonomic computer workstations for very large displays. Dr. Khasawneh received the State University of New York (SUNY) Chancellor's Award for Excellence in Teaching in 2011, the University Award for Outstanding Graduate Director in 2015, and the University Award for Excellence in International Education in 2016. He is a member of the Alpha Pi Mu and Alpha Epsilon Lambda honor societies. Dr. Khasawneh was also recently honored with the Diplomate status with the Society for Health Systems (SHS), a professional society within the Institute of Industrial and Systems Engineers (IISE) that supports the industrial engineering profession and individuals involved with improving quality and productivity within healthcare. Dr. Khasawneh also holds an honorary visiting professor position with the Industrial Engineering Department at Hebei University of Technology in Tianjin, China.

#### Wednesday Networking Buffet Lunch: March 11, 2020, 1:00 – 2:30 pm

#### Lunch Keynote - Wednesday, March 11, 2020, 1:30 – 2:00 pm



**Harry Kasuma (Kiwi) Aliwarga**  
Chief Executive Officer and Co-Owner  
UMG Myanmar  
Karet Kuningan Jakarta, Indonesia

Harry Kasuma (Kiwi) Aliwargais chief executive officer and co-owner of UMG Myanmar, one of the country's leading business conglomerates. Born in Jakarta, Indonesia, Mr. Aliwarga graduated from the Institute of Technology of Indonesia (ITI) in 1992 with a degree in industrial engineering and later received a master's degree in civil engineering at the Asia Institute of Technology in Thailand. Kiwi Aliwarga began his professional career in the business development division at Astra International, one of Indonesia's largest traded companies, where he worked from 1992 to 1995. He went on to become business development manager at United Tractors-Indonesia (UT) before founding UMG Myanmar in 1998 with his partner MarLar Win. Mr. Aliwarga has set the ambitious goal of making UMG a billion-dollar company by 2020, by relying on three essential pillars: people, leadership, and the relentless pursuit of excellence.

**Keynote I - Thursday, March 12, 2020, 9:40 – 10:20 am****Yousef Al-Assaf**

President, Rochester Institute of Technology (RIT) – Dubai  
Dubai Silicon Oasis, Dubai, United Arab Emirates

**How industry 4.0 is transforming Industrial Engineering?**

Dr. Al-Assaf had his PhD from Oxford University and leadership training from Cornell University. He is a widely published and academic and senior education management professional with extensive international experience. He is currently President of Rochester Institute of Technology- Dubai, a leading not for profit international branch of RIT Rochester, New York. RIT Dubai University is established in conjunction with the Dubai Government in Dubai Silicon Oasis. Prior to this he was Dean of the College of Engineering at the American University of Sharjah where he was one of the founding members of the electrical engineering and computer engineering programs. During his tenure at RIT Dubai, he has ensured that the university plays a major role in the ecosystem of Dubai Silicon Oasis and supporting the strategic plans of UAE and Dubai. Introduced a number of new programs, certifications and initiatives to meet the needs of public and technology partners including: Smart City Sciences, Data Analytics, Emerging Technologies, Corporate and Customer Happiness, Future Foresight and Strategic Planning, Computing Security and Sustainability among others. Dr. Al-Assaf's research focuses on using soft computing to model and control various industrial, business and medical systems. Applications include materials modeling and classification, prostheses control, industrial quality control and optimization. His industrial experience is in the areas of adaptive and predictive control, soft computing and industrial instrumentation and control.

**Keynote II - Thursday, March 12, 2020, 10:20 – 11:00 am****Prof. Dr. Bhaskar Bhandarkar**

Director General, Institution for Innovation, Industrial Engineering & Entrepreneurship  
Principal Investigator IUSSTF India  
Former Chairman of IIIE - Indian Institute of Industrial Engineers  
Governing Council Member Engineering Council India

Dr. Bhaskar Bhandarkar is Director General of Institution for Innovation & Industrial Engineering and Entrepreneurship. He received BSc from Nagpur University, BTech from JNU New Delhi, MTech from Pune University, MBA (Operation & Marketing) and PhD: BIT, Mesra, Gold Medalist from NCDC, GOI, Ministry of Home affairs. Dr. Bhandarkar has 37 years' experience in Operations/Refits/Quality Assurance/Manufacturing and Training; Consultant to NITIE Govt. of India, Ministry of Human Resource Development; Chairman, Indian Institution of Industrial Engineering for record eight years; Director General Indian Institution of industrial Engineering Mumbai, Managing Editor of Industrial Engineering Journal; Member of the Technical Committee Indian Register of Shipping. He served in many international committees including Board Member of Asia Pacific IE and Management Systems Society (APIEMS), and Program Head: Indo US Science & Technology Forum (workshop). His research interests are servant leadership, safety management, quality management, futuristic

SCM and logistic and lean six sigma. He is a Fellow of Institution of Engineers (India)(FIE), Institution of Marine Engineers (FMarE), and Indian Institution of Industrial Engineering (FIIE). Dr. Bhandarkar received various awards including Lilian-Gilbert Award, Ramaswami Award, Coal-India Productivity Award, Shiksha-Bharati Award, Best-Educationalist Award, Distinguished Engineer Awards, Distinguished IIIE Service Award. International recognitions include Production and Operation Management Society (POMS): Recognition on 08th May 2016 at Orlando USA Conference, IEOM at Rabata, Morocco Conference, Advisor IEM, MOST Govt of Taiwan. He served as an Associate Editor of International Journal of Production Research (IJPR) Taylor and Francis. Award Constituted in the Honour of Dr Bhandarkar include Dr. Bhandarkar Award for First Merit Student, VJTI, Mumbai University and Nagpur University and Cdr Bhandarkar Visionary Leadership Award (For CEOs with outstanding leadership and Visionary Institution Building).

**11:00 – 11:30 Networking Break****Keynote III - Thursday, March 12, 2020, 11:30 am – 12:00 pm****Dr. Sayyad Zahid Qamar**

Associate Professor, Mechanical and Industrial Engineering Department  
College of Engineering  
Sultan Qaboos University, Al-Khouth, Sultanate of OMAN

Dr. Sayyad Zahid Qamar is currently associated with the Mechanical and Industrial Engineering Department, Sultan Qaboos University (SQU), Muscat, Oman. He has over 25 years of academic and research experience in different international universities. He has also worked as a professional mechanical engineer in the field for over 6 years in the heavy engineering and fabrication industry (Manager Research and Development; Deputy Manager Design; Production Engineer; Quality Control Engineer). He has also been actively involved in research and accreditation work related to engineering education. His research areas are Applied materials and manufacturing; Applied mechanics and design; Reliability engineering; and Engineering education. As part of the Applied Mechanics and Advanced Materials Research group (AM2R) at SQU, he has been involved in different applied

research funded projects in excess of 4 million dollars. He has over 200 research/technical publications to his credit (2 research monographs/books, 2 edited book volumes, 6 book chapters, 160 publications in refereed international journals and conferences, and 36 technical reports). He is currently editing one volume (Renewability of Synthetic Materials) for the Elsevier Encyclopedia of Renewable and Sustainable Materials. He has served as Associate editor, Guest editor, and Member editorial board for different research journals (including Materials and Manufacturing Processes, Journal of Elastomers and Plastics, the Journal of Engineering Research, etc.) He has received PhD from King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia, MS from Institute for Innovation and Design in Engineering, Texas A&M University, College Station, Texas; and Stanford University, Palo Alto, California, USA and BE from NED University of Engineering & Technology, Karachi, Pakistan.



## Thursday Lunch Buffet and IEOM Student Chapter Presentations March 12, 2020, 1:00 – 2:30 pm – Ballroom

MAPUA University, Philippines  
University of West Bohemia, Pilsen, Czech Republic  
P.D.A. College of Engineering, India  
Sebelas Maret University (UNS), Indonesia  
Shipbuilding Institute of Polytechnic Surabaya

### Thursday Awards Dinner – 7:00 pm to 10:00 pm

#### Awards Keynote



**Professor Charles Mbohwa**  
Pro-Vice Chancellor Strategic Partnerships and Industrialisation  
University of Zimbabwe  
Mt Pleasant, Harare, Zimbabwe

Professor Charles Mbohwa is the University of Zimbabwe Pro-Vice Chancellor responsible for Strategic Partnerships and Industrialisation since 1st July 2019. Before that he was a Professor of sustainability engineering in the Faculty of Engineering and the Built Environment at the University of Johannesburg. Earlier on in his career, he was a mechanical engineer in the National Railways of Zimbabwe from 1986 to 1991; lecturer and senior lecturer at the University of Zimbabwe and joined the University of Johannesburg as a senior lecturer in 2007. He is an established researcher and is NRF-Rated in category C1. He was the Chairman and Head of

Department of Mechanical Engineering at the University of Zimbabwe from 1994 to 1997 and was Vice-Dean of Postgraduate Studies Research and Innovation in the Faculty of Engineering and the Built Environment at the University of Johannesburg from July 2014 to June 2017. He was Acting Executive Dean in the Faculty of Engineering and the Built Environment from November 2017 to July 2018. He has published more than 700 papers in peer-reviewed journals and conferences, 20 book chapters and 7 books. He has a Scopus h-index of 13; a web of science h-index of 11 and Google Scholar h-index of 18. He holds a BSc Honours in Mechanical Engineering from the University of Zimbabwe in 1986; Masters of Science in Operations Management and Manufacturing Systems from University of Nottingham; and a Doctor of Engineering from the Tokyo Metropolitan Institute of Technology.

He was a Fulbright Scholar for 6 months in 2006/2007 at the Supply Chain and Logistics Institute at the School of Industrial and Systems Engineering, Georgia Institute of Technology,. He was also a Japan Foundation Fellow. He is a Fellow of the Zimbabwe Academy of Science and of the Zimbabwean Institution of Engineers. He is a registered mechanical engineer with the Engineering Council of Zimbabwe. He has been a collaborator in projects of the United Nations Environment Programme. He has been involved in research exchange with collaborator in many countries including the United Kingdom, Japan, German, France, the USA, Brazil, Sweden, Ghana, Nigeria, Kenya, Tanzania, Malawi, Mauritius, Austria, the Netherlands, Uganda, Namibia and Australia. In 2016, he was a finalist of the TW Kambule-NSTF Award for research and its outputs by an individual over a period of up to 15 years after award of a PhD and a finalist in the category Research or Engineering Capacity Development NSTF Awards for achievements over the last five to 10 years. He is a Global Council Member and Fellow of the Industrial Engineering and Operations Management Society. He is a reviewer for more than 20 international journals and is a member of the editorial boards/ committees of 5 journals. He has collaborated with the United Nations organisations and has assisted to write the Global Guidance Principles for Life Cycle Assessment Databases and has reviewed Methodological Sheets for Subcategories in Social Life Cycle Assessment. He is a founding member of the Social Life Cycle Assessment Alliance coordinated by the World Resources Forum, which will focus, among many other things, on social impacts of sustainable recycling. He has been a board member of the African Roundtable in Sustainable Consumption and Production. He was also a board member of Almin Industries and for Willowvale Motor Industries in Zimbabwe. He has successfully supervised more than 50 Master's students, 12 doctoral students and 12 postdoctoral fellow.

### Submissions Received from Countries and Territories

Algeria	Ethiopia	Jordan	Palestine	Sweden
Australia	Finland	Kenya	Paraguay	Taiwan
Bangladesh	France	Kuwait	Philippines	Tajikistan
Belgium	Germany	Latvia	Portugal	Thailand
Brazil	Greece	Libya	Qatar	Tunisia
Canada	India	Macedonia	Russia	Turkey
Cape Verde	Indonesia	Malaysia	Saudi Arabia	UAE
China	Iran	Mexico	Singapore	United Kingdom
Colombia	Ireland	Morocco	South Africa	United States
Czech Republic	Israel	Nigeria	South Korea	Vietnam
Ecuador	Italy	Oman	Spain	Zimbabwe
Egypt	Japan	Pakistan	Sri Lanka	

# 17<sup>th</sup> IEOM Global Engineering Education DISTINGUISHED SPEAKERS

## Tuesday (March 10, 2020)

**Session I: Global Engineering Education - 8:00 – 9:30 am (Tuesday) – Room 1**

Session Chair: Dr. Imad Alsyouf, University of Sharjah, United Arab Emirates

8:00 – 8:30 (Tuesday)

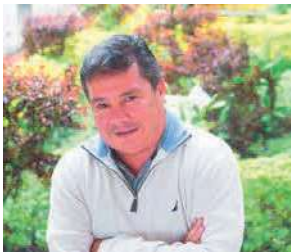


**Dr. Imad Alsyouf**  
Associate Professor of Industrial Engineering  
Director of Sustainability Office  
University of Sharjah  
United Arab Emirates

### Sustainability Circles the way to Sustainability Excellence in Institutes of Higher Education

Imad Alsyouf is an associate professor of Industrial Engineering, employed by University of Sharjah, UAE. He is the founder and coordinator of the Sustainable Engineering Asset Management (SEAM) Research Group. He has produced more than 67 conference and journal papers. He has about 30 years of industrial and academic experience in various positions in Jordan, Sweden and UAE. His research interests include reliability, quality, maintenance, and optimization. He has developed and taught more than 25 post and undergrad courses. He delivered training courses in Kaizen, TQM, and organizational excellence.

8:30 – 9:00 (Tuesday)



**Dr. César A. Collazos**  
Full Professor  
Computer Science Department  
Universidad del Cauca-Colombia  
Popayán, Cauca, Colombia

### Collaborative games as a mechanism to support collaborative learning processes

César A. Collazos, full professor computer science department at Universidad del Cauca-Colombia. Phd in computer science and head of IDIS research group at Universidad del Cauca. His main research areas include: Human Computer Interaction, Computer Supported Collaborative Learning, ICT in education.

9:00 – 9:30 (Tuesday)



**Dr. Mohammad Mashud**  
Professor, Department of Mechanical Engineering  
Khulna University of Engineering & Technology (KUET)  
Khulna-9203, Bangladesh

Dr. Mohammad Mashud is a Professor in the Department of Mechanical Engineering, Khulna University of Engineering & Technology, Bangladesh. He was born in Dhaka, Bangladesh in 1975. He received his Ph.D. in Aerospace Engineering from Nagoya University, Japan in 2006. He also earned Master of Engineering from the same department and university from Japan in 2003. He completed his Bachelor of Science in Engineering (Mechanical) from Khulna University of Engineering & Technology (KUET), Bangladesh. In 1999 he joined as a lecturer in the Department of Mechanical Engineering, KUET. He served as a Head of the Department of Mechanical Engineering, KUET for the duration of two years (2012-2013). He supervises research activities in the field of aerodynamics, UAV, fluid mechanics and energy sciences and teaches fluid mechanics and aerodynamics for bachelor students in engineering sciences as well as post-graduate students in mechanical & bio-medical engineering. He has successfully supervised 7 post-graduate and more than 100 bachelor students thesis. He has been involved many research projects funded by ministry of education, university grant commission and KUET. He received academic awards and scholarship from government and professional institutes. Dr. Mashud served as a technical Chair, Co-chair of many international conferences, he also organized an

international conference as an organizing secretary.

**Session II: Global Engineering Education - 2:30 – 4:00 pm (Tuesday) – Room 1**

Session Chair: Dr. Heba Y. M. Soliman, Port Said University, Egypt

2:30 – 3:00 (Tuesday)



**Professor Assem Tharwat**  
Professor at the College of Business Administration  
American University in the Emirate  
Dubai, UAE

Prof Assem Tharwat earned his master's degree in mathematical Statistics and his bachelor's degree in mathematics from Cairo University, Egypt, and his Ph.D. in Operations Research from Charles University, Czech Republic. He accumulated more than 35 years of academic experience in different universities in both the public and private sectors in Egypt and in UAE. He taught both basic and advanced courses in many fields in Operations Research and Management Sciences. Prof Assem supervised about forty Ph.D. and M.Sc. thesis during the past 20 years and he published about 100 articles in International/National Journals and conferences during the past 30 years. In addition, he accumulated more than ten years' experience in the accreditation field in Egypt and UAE, moreover he is working as a member in the AACSB team for almost three years in AUE. Prof Assem has a very good experience in the academic positions for more than 15 years and he served as a dean between 2011 and 2013 in CIC, Egypt & between 2017 and 2019 in COBA, AUE, UAE.

3:00 – 3:30 (Tuesday)

**Dr. Waleed K. Ahmed**

Assistant Professor, Engineering Requirements Unit, College of Engineering  
United Arab Emirates University, Al Ain, UAE

**Merging 3D Printing Technology to Enhance Engineering Pedagogical Process: Applications and Challenges**

Originally from Mesopotamia, Dr. Waleed K. Ahmed obtained B.Sc. in Mechanical Engineering from the University of Baghdad in 1992. Served over 6 years in the manufacturing and quality control industrial sector. In 2000, obtained M.Sc. in Applied Mechanics from the University of Technology, Baghdad. Appointed as a lecturer in 2001 at the Materials Engineering Department, Al-Mustansiriya University, Baghdad. In 2006 completed Ph.D. from Al-Mustansiriya University joint venture with the University of Nottingham. Worked as a consultant for many industrial companies. Dr. Waleed moved to work at United Arab Emirates University in 2006. From 2009 to 2019, worked as an instructor in the Engineering Requirements Unit as well as serving the Mechanical Engineering Department. Published more than 50 journals and conference papers. The main interest in renewable energy, nanomaterials, failure analysis, FEA, fracture mechanics, forensic engineering, composite recycling, as well as e-Learning. Awarded UAEU Chancellor Innovation Award for 2017 and 2018. Has four granted patents and 3 under examination. Granted AUA (Asian Universities Alliance) Fellowship Award 2019 conducting research at Nanotechnology and Catalysis Research Centre in UM, Malaysia. Nowadays focusing on 3D printing technology in material, manufacturing, and education. Recently has been appointed as an Assistant Professor in the Engineering Requirements Unit.

3:30 – 4:00 (Tuesday)

**Dr. Heba Y. M. Soliman**

Associate Professor, Electrical Engineering Department  
Port Said University, Egypt

**Electrical Engineering Education in both Egyptian NARS and Pearson BTEC Higher Nationals Standards**

Dr. Soliman is an Associate Professor in the area of wireless communications and signal processing at Electrical Engineering department, Port Said University. She is the Executive manager of the Entrepreneurship, Innovation and sustainable environment unit of Faculty of Engineering, Port Said University. She is the Vice Executive manager of Quality and Accreditation Unit of Faculty of Engineering, Port Said University. She is Responsible for the Wireless Antennas Laboratory, Faculty of Engineering, Port Said University. She has also a special interest in the methodologies, quality and accreditation standards of the electrical engineering education. Her Continuous learning and training interests are in the filed of Smart cities technologies and Smart cities management. Dr. Soliman got her MSc (2004) and PhD (2010), Suez Canal University, Egypt. She got a training in Connected Vehicles Cloud Computing for Smart Cities, with Electrical and Computer Engineering department and a training about Smart Poles and Smart Cities, with Sustainable Smart Cities research center, UAB, Alabama, USA, 2018. Her contributions related to efficient use of power and frequency resources in wireless communication systems included 15 publications. Since 2010, she has participated in international conferences and workshops in Qatar, Poland, USA and Dubai. She has supervised 7 MSc and 3 PhD at Port Said and Suez Canal Universities. She is a referee in ELSEVIER, Computer Standards and Interfaces Journal. Dr. Soliman is a member in the research project "Geometric Algebra based Electromagnetic waves simulator", funded by the ministry of communication (ITIDA-ITAC).

**Dr. Lakhwinder Pal Singh**

Associate Professor, Department of Industrial and Production Engineering  
Dr. B.R. Ambedkar National Institute of Technology  
Jalandhar, India



Dr. Lakhwinder Pal Singh is working as a faculty in the Department of Industrial and Production Engineering at Dr. B R Ambedkar National Institute of Technology, Jalandhar Since 2000, he. He has 20 years' experience in teaching and research, and has published more than 45 papers in national and international journals and 50 papers in conferences and contributed a number of 6 book chapters and five books out of which Work study and Ergonomics (Cambridge University Press) is well accepted at Global level. His areas of research interest are Ergonomics and Human Factors Engineering, Occupational Health and Safety, Lean manufacturing, Operations and Supply Chain management. He is a life member of more than seven societies mainly including; IIE, IEI, ISTE, GIFT and ISE. He has organised seven International conferences and 12 short term courses in various capacities, he has also been Co-Chair and Organising Secretary of 14th International Conference (HWW-2016) and 17th (HWW-2019) of Indian Society of Ergonomics from 8th-10th November, 2019. He has guided 6 PhD and two are in process, 45 M Tech and 2 are in process. Filed one patent filed "Ergonomic Design of Transfer Assisting Device (portable stretcher) for Shifting of Patients' after major Surgery (from operation table to Stretcher, stretcher to bed and vice versa)" Patent Application File No. 201611016124 by Dr Lakhwinder Pal Singh, Dr B R Ambedkar NIT Jalandhar. Beside he has delivered many expert talks at various institutions in India and Abroad. He has visited different countries including USA, UK, Australia, Dubai, Malesia, Mauritius, Italy, and Turkey.

**Session III: Global Engineering Education – Panel Session - 4:30 – 6:00 pm (Tuesday) – Ballroom**

Panel Chair: Dr. Abu Masud, Wichita State University, Kansas, USA

**Dr. Abu Masud, P.E.**

Emeritus Professor, Department of Industrial and Manufacturing Engineering  
Wichita State University, Kansas, USA

Dr. Abu Masud is an emeritus professor of industrial and manufacturing engineering at Wichita State University. He was named the Boeing Global Engineering Professor at Wichita State University. Dr. Masud advanced the College of Engineering's strategic alliances for global enrichment and experiential learning of students as well as international research collaborations and partnerships. He received Duane and Velma Wallace Outstanding Educator Award from WSU College of Engineering. Previously he was held various positions at Wichita State including dean and associate dean of graduate school (2008-2013), coordinator, college ABET affairs (2006-2008), associate dean, college of engineering (2004-2005), chair, industrial and manufacturing engineering department (1994-2004) and graduate coordinator of IME (1991-94, 1996-98, 2001-2004). Dr. Masud has engaged with various companies and governmental research centers including NASA Langley Research Center, VA, NASA/ASEE Summer Faculty Fellow (1991 and 1992), Boeing, Consulting Analyst, and Kuwait Institute for Scientific Research. He is member of Accreditation Review Council (2011-2014). Dr. Masud published book, book chapters, and numerous journal and conference papers. He is registered Professional Engineer at Kansas State. Dr. Masud is an IIE fellow. He received Ph.D. and M.S. in Industrial Engineering from Kansas State University, and B.S. in Mechanical Engineering from Bangladesh University of Engineering & Technology.

## Panel Speakers



**Dr. Alaa Ashmawy**  
Professor and Dean  
School of Engineering  
American University in Dubai  
United Arab Emirates

Dr. Alaa Ashmawy joined AUD in 2006 as Dean of Engineering. Prior to his appointment at AUD, he had been a tenured Associate Professor at the University of South Florida in Tampa. His expertise is in geotechnical engineering, with interests in numerical modeling of foundations and earth structures, environmental geotechnics, and soil dynamics & earthquake engineering. Dr. Ashmawy's experience includes engineering consulting for a number of companies in the US, and a visiting professorship at the Universidad de las Americas in Puebla, Mexico. He is a licensed professional engineer in the State of Florida (USA) and an ABET Program Evaluator. He received Ph.D. in Civil Engineering from Purdue University, M.S. in Civil Engineering from Purdue University and B.S. in Civil Engineering from Alexandria University (Distinction with Honors).



**Rosemary Seva, Ph.D.**  
Professor of Industrial Engineering  
Former Dean at the Gokongwei College of Engineering  
De La Salle University, Manila, Philippines

Rosemary Seva is a Professor of Industrial Engineering and former Dean at the Gokongwei College of Engineering – De La Salle University, Philippines. She is the current President of three ergonomics organizations: Asian Council on Ergonomics and Design (ACED), the Southeast Asian Network of Ergonomics Societies (SEANES) and Human Factors and Ergonomics Society of the Philippines (HFESP). She also heads the Engineering Commission of the Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU). She obtained her doctorate degree at the Nanyang Technological University (Singapore). She has two master's degrees: one in Ergonomics from the University of New South Wales (Australia) and in Industrial Engineering from De La Salle University. She is an ASEAN Engineer and a Professional Industrial Engineer.



**Khaled S. El-Kilany, Ph.D.**  
Professor and Head, Department of Industrial and Management Engineering  
Arab Academy for Science, Technology and Maritime Transport, Alexandria, Egypt

Khaled S. El-Kilany is a professor of industrial engineering at the department of Industrial and Management Engineering (IME) at the Arab Academy for Science, Technology, and Maritime Transport (AASTMT), which is accredited by the Engineering Accreditation Commission of ABET since 2010. The department offers both B.Sc. and M.Sc. degrees in Industrial and Management Engineering. Prof. El-Kilany has previously been appointed as acting head of department of Industrial and Management Engineering for two years (February 2005 – February 2007) and is currently the head of department since February 2009. Prof. El-Kilany is a senior member of the IISE and is a reviewer of several journal, conferences, and textbooks. Prof. El-Kilany has received his Ph.D. in Mechanical and Manufacturing Engineering from Dublin City University, Ireland. Having Intel Ireland as the industry research partner, his research work included modelling and simulation of automated material handling system of Intel's wafer fabrication facility Fab24, which was the second wafer fabrication facility in the world that produces 300mm wafers. Since graduation in 1997, Prof. El-Kilany has developed extensive experiences in teaching and research within the academic and professional field of Industrial Engineering. Also, Prof. El-Kilany has almost ten years of experience in the design, development, and accreditation of undergraduate and postgraduate industrial engineering curricula. He has been directly involved in all processes required for accreditation by ISO, ABET, IMechE, IET, National Authority for Quality Assurance and Accreditation in Egypt, and the Supreme Council of Universities. He's an editor and reviewer of several department and college self-study reports presented to different national and international accreditation bodies in the US, UK, and Egypt; has led teams across the department and college to coordinate all departments' efforts to satisfy these bodies' requirements; and hosted various visits by program evaluators and examiners to the department and college. His research interests lies in the analysis and improvement of manufacturing systems performance; specifically, material flow and WIP management using discrete-event systems simulation and optimization techniques. He has supervised over 15 Masters Research students to completion and is supervising a number of PhD Research students in Ireland and the U.K.

### Session IV: Global Engineering Education - 8:00 – 9:30 am (Wednesday) – Room 1

Session Chair: Dr. Jafri Mohd Rohani, Universiti Teknologi Malaysia

8:00 – 8:30 (Wednesday)



**Dr. Sidi M Ahmed Ghaly**  
Assistant Professor, Electrical Engineering Department  
College of Engineering  
Al Imam Mohammad Ibn Saud Islamic University  
Saudi Arabia

#### **Assessment and Evaluation of Engineering Student Outcomes**

Dr. Sidi M Ahmed Ghaly is an Assistant Professor at the Electrical Engineering Department, College of Engineering, Al Imam Mohammad Ibn Saud Islamic University. Holds a Ph.D. in Instrumentation & Micro-Electronics, Nancy University, France, a Master of Instrumentation & Micro-Electronics, Nancy University, France. He is the head of the quality committee in the EE department. He works on Instrumentation, RF Coils, ECT Sensors, Fractional PID Controllers and Engineering Education. His focus is on ECT Sensors, RF coils, and Assessment.

8:30 – 9:00 (Wednesday)

**Dr. Md. Mizanur Rahman, CEng, Chartered Energy Engineer**  
Senior Lecturer (Thermo Fluid), School of Mechanical Engineering  
University Technology Malaysia (UTM), Skudai, Johor Bahru, Malaysia

#### **Energy technology education in engineering programs: paradigm shift from technology-centred to multidisciplinary focus**

Md. Mizanur Rahman is currently a Senior Lecturer at Thermo-Fluids Panel, School of Mechanical Engineering, Universiti Teknologi Malaysia UTM, Johor Bahru, Malaysia. Dr. Mizanur is a certified Chartered Energy Engineer by Energy Institute UK. Before joining at UTM, he has served as a Postdoctoral Researcher at Aalto University School of Engineering, Finland. Mizanur also has more than 12-year working experience in a government statutory body namely Bangladesh Rural Electrification Board (BREB), Bangladesh. During his tenure in BREB, Mizanur has gathered practical experiences in dealing with techno-economic and sociocultural challenges faced by rural electrification program. He has accumulated deep insights towards the solution pathways for

the Global Mega-challenge of having 1.2 billion people without access to electricity yet. Mizanur has sound understanding into the global energy sector challenges and its societal implications. He has received his Ph.D. in Energy Economics and Power plant Engineering from Aalto University, Finland, M.Sc. in Sustainable Energy Engineering from Royal Institute of Technology KTH, Sweden, and B.Sc. in Mechanical Engineering from Khulna University of Engineering and Technology, Bangladesh. His research interests include Thermodynamics, low temperature Kallian cycle, energy economics, energy management, energy efficiency and system, sustainable and renewable energy, energy system modelling, Life-Cycle analysis, distributed power generation, multicriteria evaluation etc. Mizanur has several publications in International referred journals in energy engineering domain.

9:00 – 9:30 (Wednesday)



**Dr. Jafri Mohd Rohani**  
Head of the Industrial Engineering Programme  
Department of Materials, Industrial and Manufacturing Engineering  
Faculty of Mechanical Engineering  
Universiti Teknologi Malaysia,  
Skudai, Johor, Malaysia

#### Enhancing Outcome Based - Education Industrial Engineering Curriculum at Universiti Teknologi Malaysia

Jafri Mohd Rohani is a Senior Quality and Statistical Engineering Lecturer. He is also Head of the Industrial Engineering Programme at the Department of Materials, Industrial and Manufacturing Engineering, Faculty of Mechanical Engineering, Universiti Teknologi Malaysia, Skudai, Johor. Currently, he is the President of JohorCost and Quality Engineers Society. He is a member of the American Society for Quality (ASQ) and Human Factor Society of Malaysia.



**Dr. G. Suseendran**  
Assistant Professor, School of Computing Sciences Department of Information Technology  
Vels Institute of Science, Technology & Advanced Studies (VISTAS)  
Pallavaram Chennai-6000117, India

Dr. G. Suseendran received his M.Sc., Information Technology and M.Phil., degree from Annamalai University, Tamil Nadu, India and Ph.D., degree in Information Technology-Mathematics from Presidency College, University of Madras, Tamil Nadu, India. In additional qualification, he has obtained DOEACC 'O' Level AICTE Ministry of Information Technology and Honor Diploma in Computer Programming. He is currently working as Assistant Professor, Department of Information Technology, School of Computing Sciences, Vels Institute of Science, Technology & Advanced Studies (VISTAS), Chennai, Tamil Nadu, India which is well known University. He has 10 years of teaching experience in both UG and PG Level. His research interests include Wireless

Senior Network, Ad-hoc networks, IOT, Data Mining, Cloud Computing, Image Processing, Knowledge-based systems and Web Information Exploration. He has produced 4 M.Phil., Scholars and 3 Ph.D., Research Scholars awarded under my Guidance and Supervision. He has published more than 72 research papers including 3 SCI publication in various International Journal such in Science Citation Index, IEEE Access, Springer Book Chapter, Scopus, and UGC referred journals. He has presented 20 papers in various international Conferences. He authored 11 Book and received 6 awards.

#### Session V: Business and Management Education – Teaching and Learning - 2:30 – 4:00 pm (Wednesday)

Session Chair: Dr. Mohammad Iqbal, Shahjalal University of Science and Technology, Sylhet, Bangladesh

2:30 – 3:00 (Wednesday)



**Dr. Ghada El Khayat**  
Professor and Head of Department  
Department of Information Systems and Computers  
Alexandria University  
Alexandria, Egypt

3:00 – 3:30 (Wednesday)



**Dr. Abdul Talib Bon**  
Professor of Technology Management  
Department of Production and Operations Management  
Universiti Tun Hussein Onn Malaysia

#### Teaching Factory Based Learning IR 4.0: New Paradigm in Engineering Education

Dr. Abdul Talib Bon is Professor of Technology Management in Department of Production and Operations Management, Faculty of Technology Management and Business at the Universiti Tun Hussein Onn Malaysia. He has a PhD in Computer Science, which he obtained from the Universite de La Rochelle, France in the year 2008. His doctoral thesis was on topic Process Quality Improvement on Beltline Moulding Manufacturing. He studied Business Administration major in Quality Management at the master's level in the Universiti Kebangsaan Malaysia for which he was awarded the MBA in the year 1998. He's bachelor degree and diploma in Mechanical Engineering which he obtained from the Universiti Teknologi Malaysia. He received his postgraduate certificate in Mechatronics and Robotics from Carlisle, United Kingdom in 1997. He is Director of Teaching Factory and Manager of Centre for Technology (Furniture Innovation Technology) since 1 September 2016. Dr. Abdul Talib Bon has had over 30 year experience of teaching in higher learning education. Dr. Abdul Talib Bon has multidisciplinary research interests that encompass industrial engineering, quality management and production and operations management. His completed 17 research grant projects as project leader include applications of forecasting in industries. He has supervised more than 100 undergraduate and PhD research students. He has served as a reviewer for a number of engineering management conferences and journals as part of his expertise sharing initiatives. He had published more than 300 International Proceedings and International Journals and 8 books. He is also Fellow and President of Industrial Engineering and Operation Management Society (IEOMS, Malaysia), Professional Technologist of Malaysia Board of Technologists (MBOT), Council member of Management Science and Operation Research Society of Malaysia (MSORS), member of International Association of Engineers (IAENG), member of Institute of Industrial Engineer (IIE), USA, member of International Institute of Forecasters (IIF), member of Technological Association of Malaysia (TAM) and associate member of Malaysian Institute of Management (AMIM).

3:30 – 4:00 (Wednesday)

**Dr. Mohammad Iqbal**

Professor, Dept. of Industrial and Production Engineering  
Shahjalal University of Science and Technology, Sylhet-3114, Bangladesh

Dr. Mohammad Iqbal is currently serving as a Professor at Shahjalal University of Science and Technology (SUST) under the Department of Industrial and Production. Professor Iqbal obtained his Bachelor of Technology (Mechanical) from Sri Venkateshwara University, College of Engineering, Tirupati, Andhra Pradesh, India and M.Sc. Engg. from Industrial and Production Engineering, BUET, Dhaka in 1989 and 1993 respectively. He received his Ph.D. from Dublin City University, Dublin, Republic of Ireland in 2000. Professor Iqbal served as a visiting research scholar at Mary O' Connor Process Safety Center, Texas A & M University, College Station, Texas, USA in the year 2018. He is the founder lecturer of the Department of Industrial and Production, SUST. He served as the Head of the dept. for 13 years and Dean of School of Applied Science and Technology for two years. He was the Head of Petroleum and Mineral Engineering Dept. Shahjalal University of Science and Technology (SUST), Sylhet, Bangladesh for one year. He has 28 years of industrial, research and teaching experiences. Professor Iqbal's present research interest includes Virtual Reality, Ergonomics, Industrial safety and risk management, Supply chain management, Renewable energy and Production system analysis. He has more than 100 International publications in conference proceedings and peer review journals. He is a co-author of three engineering books namely Surveying, Engineering Materials and Industrial Health, Safety and Welfare. He is a life member of Institution of Engineers, Bangladesh. He was the honorary secretary of Institution of Engineers Bangladesh (IEB) Sylhet Centre, Sylhet, Bangladesh during 2018-2019. Dr. Iqbal was the Conference Chair of IEOM Society -Bangladesh Chapter held in December, 2019. He was the Chair of IEOM Society - Bangladesh Chapter in March, 2018 - February, 2020. Professor Iqbal conducted many training programs, seminars, workshops and symposiums at home and abroad. He has been involved in several research projects funded by the Ministry of Science and Technology, Bangladesh and SUST Research Center, Shahjalal University of Science and Technology, Sylhet, Bangladesh. Professor Iqbal received International and National Awards on research papers presented at different International Conferences home and abroad.

**Ihfasuziella Ibrahim**

Researcher  
Construction Research Institute of Malaysia (CREAM)  
Kuala Lumpur, Malaysia

Ihfasuziella Ibrahim is a researcher at Construction Research Institute of Malaysia (CREAM), a research institute established under the Construction Industry Development Board (CIDB), which she joined in February 2013 and as a part time PhD's student in UiTM Shah Alam. Ihfasuziella start her career after completing a Bachelor Science in Real Estate Management with Honors from UTHM, Johor in 2009. Upon completing her studies, she has been a research assistant in University Tun Hussein Onn Malaysia (UTHM) in 2010 under the Technology Management & Business faculty. Due to high enthusiasm and encouragement for continuing studies, Ihfasuziella have been offered a place at University Tun Hussein Onn Malaysia entering Masters level on Science in Property and Facilities Management in 2010. The title of her thesis is "Development of Space Charging Model in Malaysian Higher Education Institutions. Currently, she pursued his PhD in Facilities Management at MARA University of Technology (UiTM). She is also member in Malaysian Association of Facilities Management (MAFM). Her research interests are currently in the areas of facilities management, real estate management, performance management and construction worker's amenities. She was published papers in the local and international conference, seminars, journals, articles and chapter in books. She has published journal and conference papers.

**ID 818 Analysing and Prioritizing the Antecedents of Shopping Centre Grading Using Analytical Hierarchy Process (AHP) Modelling**

Ihfasuziella Ibrahim, Abdul Talib Bon, Abdul Hadi Nawawi and Edie Ezwan Mohd Safian, Faculty of Architecture, Planning and Surveying, UiTM, 40450 Shah Alam, Malaysia and Faculty of Technology Management & Business, UTHM, 86400 Johor, Malaysia  
Ihfasuziella Ibrahim, Architecture, Planning and Surveying Department, UiTM, Shah Alam, Malaysia

## Session VI: Global Engineering Education - 4:30 – 6:00 pm (Wednesday) – Room 1

Session Chair: Glyda Aricon B. Marquez, Technological Institute of the Philippines Manila, Philippines

**Dr. Albertus Retnanto**

Professor of the Practice, Petroleum Engineering  
Texas A&M University at Qatar

**Preparing International Engineering Programs for Accreditation**

Dr. Albertus Retnanto is Professor of the Practice of Petroleum Engineering at Texas A&M University at Qatar and has been in the Petroleum Engineering program since 2009. He received his Ph.D. degree in Petroleum Engineering (1998) from Texas A&M University. He teaches undergraduate courses in numerical methods, well testing, petroleum production system, production engineering, petroleum technical presentation, natural gas engineering, and integrated asset development and makes significant curriculum enhancements to several courses. He held a Principal position with Schlumberger and has more than 18 years of experience worldwide in both technical and management positions in the area of well testing, field development, and production enhancement. He has received the Performed by Schlumberger Bronze Award four times. He has served as the Review Chairman of SPE Drilling & Completion Journal and chair on several committees on SPE. He received the A Peer Apart SPE Award, which is dedicated to the technical excellence of authors to the industry. He received the AFS College-level Distinguished Achievement Award in Teaching in 2016, SGA Educator Award, SEC Best Faculty Award, and the Faculty of the Year Award in five times, and the Distinguished Teaching Award. He has authored and co-authored over 35 papers. He is a PETE undergraduate advisor, and ABET/SAC coordinator. He serves as an ABET Program Evaluator (PEV) for the Engineering Accreditation Commission representing the Petroleum Engineering.

**ID 023 Preparing International Engineering Programs for Accreditation**

Albertus Retnanto, Texas A&M University at Qatar, Doha, Qatar

**Alma Arcelia Gonzalez Lozano**

Escuela Superior de Comercio y Administración Unidad Santo Tomás  
Instituto Politécnico Nacional  
Ciudad de México, Mexico

Alma Arcelia Gonzalez Lozano, Ph.D. is currently completing a master's degree by research in Education Management and Development at Escuela Superior de Comercio y Administración, Instituto Politécnico Nacional (Mexico). She holds a MSc in International Political Economy and a PhD in Strategic Studies from the Nanyang Technological University (Singapore). As a Senior Consultant at STRATHA Learning Corporation, a global training company, Dr. Gonzalez Lozano works as an education and training consultant for multinational corporations in high-tech sectors. She is a member of the US-based Association for Talent Development.

**ID 041 The Professional Profile of Aerospace Engineers for Industry 4.0**

Alma Arcelia Gonzalez Lozano, Instituto Politécnico Nacional, Gustavo A. Madero, Ciudad de Mexico, Mexico

**Dr. Luiz Pinheiro da Guia**

Professor, Departamento de Mecatrônica  
Centro Federal de Educação Tecnológica de Minas Gerais  
Avenida dos Imigrantes, 1000, Bairro Vargem, Varginha, MG, BRASIL

Luiz Pinheiro da Guia is a professor of civil engineering and teacher in the technical course of mechatronics and Doctor in civil engineering in the Department of Mechatronics of CEFET-MG, Varginha, Brazil. He earned a Bachelor's degree in Mechanical Engineering from Gama Filho University, Rio de Janeiro, and a Doctorate and master's degree in Civil Engineering from the Fluminense Federal University, Niteroi, Brazil. He published it in newspapers and conference papers. Worked of the Navy Arsenal of Rio de Janeiro and worked in several companies. Dr. Da Guia completed research projects with various Institutions in Brazil and published a book in 2015.

**ID 583 The use of computational simulation, finite element analysis and digital models to improve the practice and teaching of linear structural analysis**

LUIZ DA GUIA, Centro Federal de Educação Tecnológica de Minas Gerais, VARGINHA, Minas Gerais, Brazil

**Dr. Ankesh Mittal**

Department of Mechanical Engineering  
Sant Longowal Institute of Engineering and Technology  
Longowal, Sangrur (Punjab), India

Ankesh Mittal is pursuing his PhD. in the Department of Mechanical Engineering at Sant Longowal Institute of Engg & Tech Longowal, Punjab, India. He obtained his B.E. from Chitkara Institute of Engineering and Technology, Rajpura, Punjab and M.E. from Thapar University, Patiala in 2013 & 2015 respectively. His areas of interest include Manufacturing, Production, TQM and Industrial Engineering. He has presented few research papers in international conferences of repute.

**ID 035 To Investigate the Relationship between TQM Enablers Applicable In Indian Engineering Education Institutes**

Ankesh Mittal SLIET, Sunam, Punjab, India

**Glyda Aricon B. Marquez**

Industrial Engineering Department  
Technological Institute of the Philippines  
Quiapo Metro Manila, Philippines

Glyda Aricon B. Marquez is a 5th year Bachelor of Science in Industrial Engineering student of Technological Institute of the Philippines Manila. She has published and been a co-author of case studies and research papers such as "A Study of the Design for Trolley School Bag of Elementary Children in Grades 1-3 Using the National Institute for Occupational Safety and Health (NIOSH) Lifting Equation" which has been published in Scopus indexed journal and "A Comparative Study on Different Checkout Counters of a Grocery Store using Queuing Theory and ProModel Simulation" for Operations Research course. She is a current member of the Junior Philippine Institute of Industrial Engineers (JPIIE), current vice-president of Inhinyera, a women in engineering organization, and a former member of the Student council for the Industrial engineering department. She is a Certified Lean Six Sigma Yellow Belt title holder.

**ID 439 Unravelling the Stereotypes of Women in Industrial Engineering**

Glyda Aricon Marquez, Technological Institute of the Philippines, Manila, Philippines

**Session VII: Global Engineering Education (Room 1) - 8:00 – 9:30 am (Thursday)**

Session Chair: Nancy Tapia, Universidad de Monterrey, Nuevo León, Mexico

**Julio-Mario Daza-Escorcía**

Professor and Researcher  
Department of Industrial Engineering  
America University Foundation

Julio-Mario Daza-Escorcía is an Industrial Engineer who graduated in Corporación Universitaria de la Costa (CUC), with a Masters in Industrial Engineering in Universidad del Norte, Barranquilla, Colombia, and is Doctoral Student at Statistical Optimization in University of Valencia, Spain. He is a Professor and researcher in the Department of Industrial Engineering at America University Foundation. His research interests are in combinatorial optimization and operational research.

**ID 528 A MIP Approach for Capacity Planning in Higher Education: Case of Study of Timetabling Problems at the Industrial Engineering Departments in Bogotá, Colombia**

Julio Mario, Konrad Lorenz University Foundation BOGOTÁ, Colombia

**Dr. Yogi Tri Prasetyo**

Associate Professor  
School of Industrial Engineering and Engineering Management  
Mapúa University, Philippines

Yogi Tri Prasetyo is currently an associate professor in the School of Industrial Engineering and Engineering Management, Mapúa University, Philippines. He received a Bachelor of Engineering in Industrial Engineering from Universitas Indonesia (2013). He also studied for one year (2011-2012) at Waseda University, Japan, during his junior year as an undergraduate exchange student. He received an MBA (2015) and a Ph.D. (2019) from Department of Industrial Management National Taiwan University of Science and Technology (NTUST), with a concentration in human factors and ergonomics. He was awarded as NTUST Outstanding Youth with a perfect GPA 4.00. He has a wide range of research interests including human-computer interaction particularly related to eye movement, color optimization of military camouflage, strategic product design, usability analysis, and now he is currently doing accident analysis and prevention. He published several SCI journals in Displays, Color Research and Application, Journal of Eye Movement Research, several non-SCI journals, and several conference proceedings. In addition, Dr.Yogi has contributed to several international conferences as co-chair, chair session, and even committee members. Apart from academics, Dr.Yogi likes playing flute, judo, swimming, and hiking. He has two black belts (1st dan black belt judo and 1st dan black belt taekwondo), an international certified lifeguard, and a certified advanced diver. He speaks Indonesian, English, Chinese, Japanese, and currently, he's working hard for his Filipino.

**ID 379 Comparative Assessment of Ergonomic Education for Industrial Engineering in the Philippines**

Yogi Tri Prasetyo, Mapua University, Manila, Philippines

**Zanariah Ahmad**

Universiti Tun Hussein Onn Malaysia  
Batu Pahat, Johor, Malaysia

**ID 87 Does Smartphone usage linked to Technical Students' Anxiety and Declining Academic Performance?**

Zanariah Ahmad, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, Malaysia

**Nancy Lucero Tapia Ruiz**

Division of Extension, Consulting and Research  
Universidad de Monterrey, Mexico

Nancy Lucero Tapia Ruiz is currently studying a Master in Product Engineering in Universidad de Monterrey, México. As a scholarship holder, she works part time as a research assistant with the Dean of the Division of Extension, Consulting and Research from Universidad de Monterrey. Lucero has worked in the manufacturing area with companies like LG Electronics and John Deere. She also used to work for Universidad Autónoma de Nuevo León in the division of manufacturing. Her research interests are lean manufacturing and operational excellence.

**ID 255 Methodological development for the analysis of the viability of projects with organic waste**

Nancy Tapia, Universidad de Monterrey, Nuevo León, Mexico

**Session VII: Global Engineering Education (Room 1) - 2:30 – 4:00 pm (Thursday)**

Session Chair: Dr. S. Balamurugan, Intelligent Research Consultancy Services (iRCS), Coimbatore, Tamilnadu, India

2:30 – 3:00 (Thursday)

**Dr. Luiz Pinheiro da Guia**

Professor of Civil Engineering, Department of Mechatronics  
CEFET-MG, Varginha, Brazil

Luiz Pinheiro da Guia is a professor of civil engineering and teacher in the technical course of mechatronics and Doctor in civil engineering in the Department of Mechatronics of CEFET-MG, Varginha, Brazil. He earned a Bachelor's degree in Mechanical Engineering from Gama Filho University, Rio de Janeiro, and a Doctorate and master's degree in Civil Engineering from the Fluminense Federal University, Niteroi, Brazil. He published it in newspapers and conference papers. Worked of the Navy Arsenal of Rio de Janeiro and worked in several companies. Dr. Da Guia completed research projects with various Institutions in Brazil and published a book in 2015.

**ID 582 The use of mobile robotics to pre-mapping areas for Orienteering Competition – “Projeto Azimute Norte Varginha” – Uso of drones**

LUIZ DA GUIA, Centro Federal de Educação Tecnológica de Minas Gerais, VARGINHA, Minas Gerais, Brazil.

3:00 – 3:30 (Thursday)

**Dr. Shekar Babu PhD**

Professor & Founding Head, Department of Management  
Amrita Vishwa Vidyapeetham University, Bengaluru, India

Shekar Babu Ph.D. is the Professor and Director of “AMRITA Center for Responsible Innovations and Sustainable Enterprises”, “ARISE” Labs. He is also the Founding Head, Department of Management (DoM), Bangalore Campus, AMRITA Vishwa Vidyapeetham University, Bangalore, India. Dr. Shekar holds a Bachelor of Engineering (BE) degree in Electronics and Communications from Bangalore University and a Master of Science (MS) degree in Electrical and Computer Science from California State University, Los Angeles and a Doctoral Degree in Strategic Management from Amrita University. He is a Management Consultant with over 25 years of experience in working at Price Waterhouse, Hewlett- Packard Co and AMRITA University. His research areas are Corporate Social Responsibility (CSR), Corporate Governance (CG), Strategy and Social Development and Sustainable Goals (SDG). He has taught courses in Marketing, Leadership, Management Consulting and Business Ethics and Values.

3:30 – 4:00 (Thursday)

**Dr. S. Balamurugan**

Director-Research and Development, Intelligent Research Consultancy Services (iRCS)  
Coimbatore, Tamilnadu, India

Dr. S. Balamurugan is the Director-Research and Development, Intelligent Research Consultancy Services (iRCS), Coimbatore, Tamilnadu, India. He has published 45 books, 200+ international journals/conferences and 35 patents to his credit. He is the Editor-in-Chief of the Book Series “Artificial Intelligence and Soft Computing for Industrial Transformation”, Scrivener, John Wiley. He is the Editor-in-Chief of Information Science Letters, Natural Sciences Publishing, NSP and International Journal of Robotics and Artificial Intelligence, PRIRS, USA. He is Associate Editor of IEICE Transactions on Information and Systems-Oxford University Press, Cluster Computing- Springer, Simulation- Sage Publishing, Technology and Healthcare- IOS Press, Intelligent IoT Computing, Inderscience, World Journal of Engineering, Emerald. He is also in editorial of International Journal of Intelligent Unmanned Systems, Emerald, International Journal of Automation and Control, Inderscience Publishers, International Journal of Society, Systems and Science, Inderscience Publishers, International Journal of System Dynamics Applications (IJSDA), IGI Global Publishers, International Journal of Service Science, Management, Engineering, and Technology, IGI Global Publishers, International Journal of Knowledge and System Sciences, IGI Global Publishers and several other journals of Taylor & Francis, Inderscience, Emerald, IET, MDPI and Lead Guest Editor of several special issues with Springer, Elsevier and IEEE. He is the recipient of Rashtriya Vidhya Gourav Gold Medal Award and The Best Educationalist Award Hon. Justice O.P Saxena, Supreme Court, New Delhi and the Former Chairman of Minority Council, New Delhi, India. He is the recipient of two Lifetime Achievement Awards. He is the recipient of Dr.A.P.J.Abdul Kalam Sadhbhavana Award form Hon.Balmiki Prasad Singh, Former Governor of Sikkim, Jewel of India Award from Mr Gurbpreet Singh, General Secretary, India, Star of Asia Award Mr. Korn Debaransi, Former Dy. Prime Minister, Thailand, in an International Summit at (Bangkok) Thailand & Pride of Asia Research Excellence Award from Hon. Anant. V.Sheth, Deputy Speaker- Goa Legislative Assembly, Best Director Award. He received the “Active Member CSI National Award”. He was awarded the Prestigious Mahatma Gandhi Leadership Award by NRI WELFARE SOCIETY OF INDIA at House of Commons, British Parliament, London, UK. The book he authored on “Machine Learning and Deep Learning Algorithms using MATLAB and PYTHON” won “Best MATLAB Book for Beginners” Award by BookAuthority. Dr. Balamurugan won the CSI Young IT Professional Award. He is also the recipient of the Best Researcher Award, Certificate of Exceptionalism, Young Scientist Award, Best Young Researcher Award and Outstanding Scientist Award. His biography is listed in “Marquis WHO'S WHO”, New Jersey, USA. His professional activities include roles as Editor-in-Chief/Associate Editor/ Editorial Board Member for more than 500+ International Journals/Conferences of high repute and impact. He has been invited as Chief Guest/Resource Person/Keynote Plenary Speaker in many reputed Universities and Colleges at National and International Levels. His research interests include Artificial Intelligence, Augmented Reality, Internet of Things, Big Data Analytics, Cloud Computing, and Wearable Computing. He is a life member of ACM, ISTE and CSI.

4:00 – 4:30: Networking Break



**Session IX: Global Engineering Education (Room 1) - 4:30 – 6:00 pm (Thursday)**  
 Session Chair: Dr. Albertus Retnanto, Texas A&M University at Qatar



**Dr. Banu Y. Ekren**  
 Full Professor, Department of Industrial Engineering  
 Yasar University, Izmir, Turkey

**Engineering Education Towards Industry 4.0**

Banu Y. Ekren is a full professor in the department of Industrial Engineering, at Yasar University, in Izmir, Turkey. She got her Ph.D., from University of Louisville in the Dept. of Industrial Engineering, in Kentucky, USA. Her research focus is on future of education, warehousing, stochastic and simulation modelling, supply chains, simulation-based optimization, and design of automated warehousing. Banu Y. Ekren holds associate professor position at her university and teaches simulation, stochastic modelling and facility logistics courses at the undergraduate level. She has several journal and book chapter publications.

**ID 565 Engineering Education towards Industry 4.0**

Banu Y. Ekren, Department of Industrial Engineering, Yasar University, Izmir, Turkey  
 Vikas Kumar, Bristol Business School, University of the West of England, Bristol, Somerset, United Kingdom



**Dr. Albertus Retnanto**  
 Professor of the Practice of Petroleum Engineering  
 Texas A&M University at Qatar

Dr. Albertus Retnanto is Professor of the Practice of Petroleum Engineering at Texas A&M University at Qatar and has been in the Petroleum Engineering program since 2009. He received his Ph.D. degree in Petroleum Engineering (1998) from Texas A&M University. He teaches undergraduate courses in numerical methods, well testing, petroleum production system, production engineering, petroleum technical presentation, natural gas engineering, and integrated asset development and makes significant curriculum enhancements to several courses. He held a Principal position with Schlumberger and has more than 18 years of experience worldwide in both technical and management positions in the area of well testing, field development, and production enhancement. He has received the Performed by Schlumberger Bronze Award four times. He has served as the Review Chairman of SPE Drilling & Completion Journal and chair on several committees on SPE. He received the A Peer Apart SPE Award, which is dedicated to the technical excellence of authors to the industry. He received the AFS College-level Distinguished Achievement Award in Teaching in 2016, SGA Educator Award, SEC Best Faculty Award, and the Faculty of the Year Award in five times, and the Distinguished Teaching Award. He has authored and co-authored over 35 papers. He is a PETE undergraduate advisor, and ABET/SAC coordinator. He serves as an ABET Program Evaluator (PEV) for the Engineering Accreditation Commission representing the Petroleum Engineering.

**ID 024 Building Communication Strengths and Skills for Non-native English Speaking Engineering Students**  
 Albertus Retnanto, Texas A&M University at Qatar, Doha, Qatar



**Neetu Choudhary**  
 Executive Committee Member- Continuous Improvement Subgroup, Dubai Quality Group  
 Team Leader - UAE Innovation Awards  
 Compliance Analyst, DP World  
 Dubai, United Arab Emirates

**Lean approach for effective presentation**

Neetu Choudhary is a Continuous Improvement Leader with over 18 years of experience in Business Excellence, Quality Improvements, Strategy, Risk Management, IT Service Management, Project Management. She holds a Master's degree in Computer Application with honours. She is an ASQ Certified Six Sigma Black Belt practitioner, EFQM certified Assessor, CMMI Associate, ISACA Certified in the Governance of Enterprise IT (CGEIT), ISO 9001-2015 Certified Lead Auditor and Certified in ITIL 4 Foundation. Neetu is a passionate author and has published multiple articles on Quality, Six Sigma, Business Excellence, Presentation Skills, Risks Management in international journals along with blogging on "Peace through Parenting", Compassion, World Peace, Human Awareness and Conscious Parenting for the benefit of wider society. Neetu has presented papers & has been speaker at international conferences like ASQ- American Society of Quality, CSQ- Canadian Society of Quality, ISACA South Africa, ISACA Euro Geneva. She has been recognized as Top Rated Speake.

She is the Deputy Team Leader for Dubai Quality Awards, Team Leader for UAE Innovation Awards, Senior Assessor for Dubai SMART Industry Awards by Dubai Government, TAQDEER Awards for labourers by Dubai Government and Sheikh Khalifa Excellence Award by Abu Dhabi Government. She has been Communication Chair for ASQ Local Member Community UAE Chapter, participated in the panel of judges for the International Business Excellence Awards, ASQ – ITEA International Team Excellence Awards and Stevie Awards for Sales and Customer Service. Neetu is Executive Committee Member of Dubai Quality Group CIS group and has been in Jury Panel at Continual Improvement Symposium for Kaizen, Six Sigma, Best Practices, Happiness, and Innovation. Neetu has successfully formed and lead teams of Quality professional to implement various quality initiatives including CMMI Maturity Level 3-4 framework, ITIL, Six Sigma, Lean, EFQM, Integrated Risk Framework. She has been Assessment Team Member (ATM) for SCAMPI- Class A Appraisal. Her hands on experience to various quality frameworks and models like EFQM, ITIL, ISO 20000-1, ISO 27000, Cobit, TMMi, Project Management Office, Six Sigma, Lean, Balanced Score Card, Strategy, KPIs and Emotional Intelligence etc. makes it obvious for her to see a bigger picture holistically along with the minute details to integrate different approaches for the excellence.

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## Panels

### Tuesday, March 10, 2020

#### Panel on Industry 4.0 - 2:30 – 4:00, Tuesday (Ballroom)



Panel Chair

**Ts. Dr. Mehran Doulat**

Associate Professor of Engineering/Operations Management  
MBA Program Committee/Coordinator Director of Spectral Centre for Operational Excellence Research (COER)  
Xiamen University  
Sepang, Selangor, Malaysia  
Director Academy of Research and Training (SART Sdn. Bhd.)

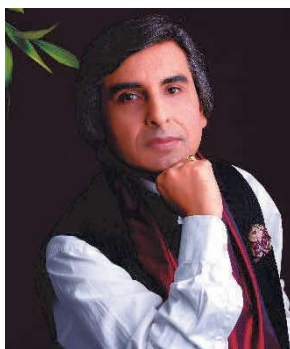
#### Panel Speakers



**Mr. Sanjay Nadkarni**

Director of Research & Innovation  
Emirates Academy of Hospitality Management (Jumeirah Group)  
United Arab Emirates

Dr. Sanjay Nadkarni is the Director of Innovation & Research at the Emirates Academy of Hospitality Management, Dubai. His domain expertise is in the convergence space of Digital, Analytics & Sustainability in the service sector. Sanjay's portfolio comprises of academic and applied research, advisory and consultancy for corporate, government and multilateral agencies, in addition to his pedagogic practice which includes visiting professorships at leading academic institutions in Asia and Europe. His professional achievements include academic awards and citations of merit. Sanjay supports social entrepreneurship and endeavors to make his research and pedagogy actionable and impact-driven to benefit industry and society. He is passionate about leveraging open data and open source platforms for the benefit of small and micro-businesses and enjoys mentoring in digital entrepreneurship.



**Satya Saurabh Khosla**

Owner and Managing Director  
Adimode Transnational Trading LLC, Dubai, UAE

Satya Saurabh Khosla was a joint venture partner of Suzuki Motorcycle (Pvt) Ltd was Vice Chairman of the company till he sold his stake before the recession in 2008. He predicted the 2008 global economic recession in an article that was published a few days before the USA and global stock indices started falling. This article stated that USA Housing, excessive misuse of derivatives etc. will lead the global economy to a recession. The article's mathematical calculation showed that the pain would become evident to all after December 2007. The author felt it is of more interest if a way to prevent it is pointed out. The book titled: How to Prevent Recession – using Ancient Wisdom and Management Ideas carries a Foreword by His Holiness the Dalai Lama and is reviewed by Prof Sir Cary Cooper of Manchester Business School and former Director of Indian Institute of Management, Ahmedabad – Prof Pradip Khandwalla. His Holiness the Dalai Lama concludes his review as follows: "...This is a very profound concept put in a very simple and elegant format." In 2017 The World Economic Forum presented its report on Future of Government to every national and state government. This report lists 24 sources in its end notes. At no. 5 is the work: How to Prevent Recession – using ancient wisdom and management ideas (Author: Satya Saurabh Khosla). He has just completed a book of Essays in Mathematics, Sciences, Economics and Management and How to Prevent Recession. His Holiness the Dalai Lama concludes in the Foreword "...with a view to strengthen the economy and benefit the widest number of people, Satya Saurabh Khosla has examined how to apply ancient wisdom...". He has been a Chief Guest and keynote speaker at international conferences. He written the course material for the World's largest Open University, was on the Course Design Committee of the National Management Program and Member, Advisory Committee, National Conference on Government Policy and Corporate Strategy: Interlink ages – Organized by Indian Institute of Management, Ahmadabad. India. The WASC Senior College and University Commission in USA has asked for a copy of his work.

#### Panel on Global Engineering Education - 4:30 – 6:00, Tuesday (Ballroom)

Panel Chair: Dr. Abu Masud, Wichita State University

#### Panel Chair



**Dr. Abu Masud, P.E.**

Emeritus Professor, Department of Industrial and Manufacturing Engineering  
Wichita State University, Kansas, USA

Dr. Abu Masud is an emeritus professor of industrial and manufacturing engineering at Wichita State University. He was named the Boeing Global Engineering Professor at Wichita State University. Dr. Masud advanced the College of Engineering's strategic alliances for global enrichment and experiential learning of students as well as international research collaborations and partnerships. He received Duane and Velma Wallace Outstanding Educator Award from WSU College of Engineering. Previously he was held various positions at Wichita State including dean and associate dean of graduate school (2008-2013), coordinator, college ABET affairs (2006-2008), associate dean, college of engineering (2004-2005), chair, industrial and manufacturing engineering department (1994-2004) and graduate coordinator of IME (1991-94, 1996-98, 2001-2004). Dr. Masud has engaged with various companies and governmental research centers including NASA Langley Research Center, VA, NASA/ASEE Summer Faculty Fellow (1991 and 1992), Boeing, Consulting Analyst, and Kuwait Institute for Scientific Research. He is member of

Accreditation Review Council (2011-2014). Dr. Masud published book, book chapters, and numerous journal and conference papers. He is registered Professional Engineer at Kansas State. Dr. Masud is an IIE fellow. He received Ph.D. and M.S. in Industrial Engineering from Kansas State University, and B.S. in Mechanical Engineering from Bangladesh University of Engineering & Technology.

## Panel Speakers



**Dr. Alaa Ashmawy**  
Professor and Dean, School of Engineering  
American University in Dubai, United Arab Emirates

Dr. Alaa Ashmawy joined AUD in 2006 as Dean of Engineering. Prior to his appointment at AUD, he had been a tenured Associate Professor at the University of South Florida in Tampa. His expertise is in geotechnical engineering, with interests in numerical modeling of foundations and earth structures, environmental geotechnics, and soil dynamics & earthquake engineering. Dr. Ashmawy's experience includes engineering consulting for a number of companies in the US, and a visiting professorship at the Universidad de las Americas in Puebla, Mexico. He is a licensed professional engineer in the State of Florida (USA) and an ABET Program Evaluator. He received Ph.D. in Civil Engineering from Purdue University, M.S. in Civil Engineering from Purdue University and B.S. in Civil Engineering from Alexandria University (Distinction with Honors).



**Rosemary R. Seva, Ph.D.**  
Professor of Industrial Engineering and Former Dean at the Gokongwei College of Engineering  
De La Salle University, Manila, Philippines

Rosemary Seva is a Professor of Industrial Engineering and former Dean at the Gokongwei College of Engineering – De La Salle University, Philippines. She is the current President of three ergonomics organizations: Asian Council on Ergonomics and Design (ACED), the Southeast Asian Network of Ergonomics Societies (SEANES) and Human Factors and Ergonomics Society of the Philippines (HFESP). She also heads the Engineering Commission of the Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU). She obtained her doctorate degree at the Nanyang Technological University (Singapore). She has two master's degrees: one in Ergonomics from the University of New South Wales (Australia) and in Industrial Engineering from De La Salle University. She is an ASEAN Engineer and a Professional Industrial Engineer.



**Khaled S. El-Kilany, Ph.D.**  
Professor of Industrial Engineering and Head of Department  
Department of Industrial and Management Engineering, College of Engineering and Technology  
Arab Academy for Science, Technology and Maritime Transport, Alexandria, Egypt

Khaled S. El-Kilany is a professor of industrial engineering at the department of Industrial and Management Engineering (IME) at the Arab Academy for Science, Technology, and Maritime Transport (AASTMT), which is accredited by the Engineering Accreditation Commission of ABET since 2010. The department offers both B.Sc. and M.Sc. degrees in Industrial and Management Engineering. Prof. El-Kilany has previously been appointed as acting head of department of Industrial and Management Engineering for two years (February 2005 – February 2007) and is currently the head of department since February 2009. Prof. El-Kilany is a senior member of the IISE and is a reviewer of several journal, conferences, and textbooks. Prof. El-Kilany has received his Ph.D. in Mechanical and Manufacturing Engineering from Dublin City University, Ireland. Having Intel Ireland as the industry research partner, his research work included modelling and simulation of automated material handling system of Intel's wafer fabrication facility Fab24, which was the second wafer fabrication facility in the world that produces 300mm wafers. Since graduation in 1997, Prof. El-Kilany has developed extensive experiences in teaching and research within the academic and professional field of Industrial Engineering. Also, Prof. El-Kilany has almost ten years of experience in the design, development, and accreditation of

undergraduate and postgraduate industrial engineering curricula. He has been directly involved in all processes required for accreditation by ISO, ABET, IMechE, IET, National Authority for Quality Assurance and Accreditation in Egypt, and the Supreme Council of Universities. He's an editor and reviewer of several department and college self-study reports presented to different national and international accreditation bodies in the US, UK, and Egypt; has led teams across the department and college to coordinate all departments' efforts to satisfy these bodies' requirements; and hosted various visits by program evaluators and examiners to the department and college. His research interests lies in the analysis and improvement of manufacturing systems performance; specifically, material flow and WIP management using discrete-event systems simulation and optimization techniques. He has supervised over 15 Masters Research students to completion and is supervising a number of PhD Research students in Ireland and the U.K.

## Panel on Supply Chain Sustainability - 2:30 – 4:00, Wednesday, March 11, 2020 (Ballroom)

Panel Chair: Dr. Jose Arturo Garza-Reyes, University of Derby, UK

## Panel Chair



**Professor Jose Arturo Garza-Reyes, Ph.D.**  
Professor of Operations Management and Head of the Centre for Supply Chain Improvement  
College of Business, Law and Social Sciences, University of Derby, UK  
Editor-in-Chief, International Journal of Industrial Engineering and Operations Management (IJIEOM)

Dr. Jose Arturo Garza-Reyes is a Professor of Operations Management and Head of the Centre for Supply Chain Improvement at the College of Business, Law and Social Sciences, University of Derby, UK. He is actively involved in industrial projects where he combines his knowledge, expertise and industrial experience in operations management to help organisations achieve excellence in their internal functions and supply chains. He has also led and managed international research projects funded by the British Academy, British Council and Mexico's National Council of Science and Technology (CONACYT). As a leading academic, he has published over 100 articles in leading scientific journals, international conferences and four books in the areas of operations management and innovation, manufacturing performance measurement and quality management systems. Areas of expertise and interest for Professor Garza-Reyes include general aspects of operations and manufacturing management, business excellence, quality improvement, and performance measurement. He is a Chartered Engineer (CEng), a certified Six Sigma-Green Belt, and has over eight years of industrial experience working as Production Manager, Production Engineer and Operations Manager for

several international and local companies in both the UK and Mexico. He is also a fellow member of the Higher Education Academy (FHEA) and a member of the Institution of Engineering Technology (MIET).

## Panel Speakers



**Dr. Sunil Luthra**  
Assistant Professor, Department of Mechanical Engineering  
Government Polytechnic, Jhajjar, India

Sunil Luthra is working as an assistant professor, State Institute of Engineering and Technology (formerly known as Government Engineering College), Nilokheri, Haryana, India. He is also working as Honorary Research Fellow at Bradford School of Management, University of Bradford, Bradford, United Kingdom. He has been associated with teaching for the last seventeen years. He has contributed over 180 research papers in international referred & national journals, and conferences at international and national level. He has an excellent research track record (over 290 cumulative impact factor points; received more than 3,400 citations and H-index – 30 on Google Scholar). He has received many Awards and Honours for the research and teaching. He is as a Guest Editor of many reputed journals such Journal of Cleaner Production, Production Planning & Control, Resources Policy, Resources, Conservation and Recycling and Annals of Operations Research etc. He is reviewing papers for more 50 reputed

journals. He is on editorial board of many reputed journals. He is technical committee member of various national and international conferences (ICMIE 2017, TEMSCON 2017 and IIIIE conference) and delivered expert lectures in various institutes of repute. He has published 05 books with reputed publishers such as CRC Press, Taylor & Francis Group, LLC and New Age International Publisher (P) Ltd. etc. His specific areas of interest are operation management; green supply chain management; sustainable supply chain management; sustainable consumption and production; renewable/sustainable energy technologies; circular supply chains; industry 4.0; big data analytics; internet of things and smart cities etc. in developing economies context.



**Dr. Anil Kumar**  
Lecturer in area of Operations, Supply Chain and Business Analytics  
Centre for Supply Chain Improvement  
The University of Derby  
Derby, United Kingdom

Anil Kumar is a Lecturer in area of Operations, Supply Chain and Business Analytics at Centre for Supply Chain Improvement, the University of Derby, U.K. For the last eight years, he has been associated with teaching and research. He earned his PhD in Management Science from Indian Institute of Information Technology and Management, Gwalior, India. He did graduation in Mathematics (Hons) and MSc in Mathematics from Kururksheta University, India. He earned Master of Business Administration (MBA) and qualified National Eligibility Test (NET), June 2011. Anil has contributed over 40+ research papers in international referred & national journals.



**Dr. Jiří Tupa**  
Vice Dean for Faculty Development, Faculty of Electrical Engineering  
University of West Bohemia, Pilsen, Czech Republic

J. Tupa received his MSc (2002) and PhD (2006) in Electrical Engineering from Faculty of Electrical Engineering, University of West Bohemia in Pilsen in Czech Republic. He is a Vice-dean of faculty and Senior Lecturer at Department of Technologies and Measurement. Dr. Tupa is member of executive management at Regional Innovation Centre for Electrical Engineering of the Faculty of Electrical Engineering at the University of West Bohemia in Pilsen. He is also PhD supervisor, reviewer of journal and conference publications and co-organizer of conferences. His research interests include Business Process Management, Quality Management, Risk and Performance Management in Electrical Engineering Industry, Industrial Engineering, Electronics Manufacturing and Diagnostics, Financial and Project Management, Copyrights and patents law, information law and transfer of IPR. Jiri Tupa is responsible for several international research and development projects with industrial and University partners. The project RiMaCon – Risk Management Software System for SMEs in the Construction Industry is one of the important international projects. This project has received funding from the European Union's Seventh Framework Program for research; technological development and demonstration (2013-2017). The RiMaCon project's main goal is to implement a collaborative effort to promote the sharing of knowledge and competencies in a long-term strategic research partnership around the development, testing and validation of a cost effective and user-friendly risk management system for SMEs in the construction sector.

**Panel on Women in Industry and Academia (WIIA)**

4:30 – 6:00 pm, Wednesday, March 11, 2020 (Ballroom)

Panel Chair: Ola AlZawati, Corporate Excellence Expert in Dubai Municipality, Dubai, UAE

Panel Chair



**Ola AlZawati**  
Corporate Excellence Expert in Dubai Municipality  
Dubai, UAE

Ms. AlZawati is a holder of the best leader Award from King Abdullah II Center for Excellence in Government Performance and Transparency and American Society for Quality Award ASQ- senior level award for the middle east and the region in 2017. She is currently a PhD. candidate in Engineering and Engineering Management at the University of Sharjah in business excellence and holds a MSc. in industrial engineering in performance management. Besides her academic knowledge, she has a 25 years of practical experience in public sector management reforms, including strategy development and execution, services and process improvements; performance management, audits and evaluations; governance, sustainability and accountability; public sector compliance including accreditation, certification and inspection; policies and procedures manuals, auditing and quality improvements, project management; innovation assessment, quality awards assessment and management. She has several internationally published papers in the field of innovation, quality and performance management. She also worked as consultant and assessor for different regional and international agencies such as UNDP, USAID, GIZ, UAE and Dubai PMOs, etc.

Panel Speakers



**Dr. Rehab Faraj Al Ameri**  
Director of National Accreditation Department  
Emirate Authority for Standardization and Metrology-ESMA and  
Secretary General of International Halal Accreditation Forum-IHAF

Before joining ESMA, Dr. Rehab was a Healthcare Quality Expert at Ministry of Presidential Affairs, UAE, and her role was oversight hospital strategic performances & setting healthcare improvement quality strategy for all hospitals under Ministry of Presidential Affairs. From 2012 until October 2016 she was a senior specialist in Abu Dhabi Quality and Conformity Council, responsible for setting up technical requirements for related activities within Quality Infrastructure system in Abu Dhabi and ensure their competency in line with international requirements. Before that, Dr. Rehab spent her carrier life of over 11 years in military, worked as Gastroenterology Consultant at Zayed Military Hospital in Abu Dhabi until reached rank "Major". During that time, she earned her MSc in science of clinical gastroenterology and reworded with higher distinction from Queen Mary University London-UK.

Also holding a Master degree in Quality Management (MQM) as well Higher Diploma on Healthcare Quality Management from Cambridge both degrees with distinction. Chaining Board of Directors of GCC Accreditation Center (GAC) and Board member in many organizations. Lead Emirate National Accreditation System to achieve its International recognition as the first national accreditation body in the region based on the new ISO/IEC 17011:2017 standard. Pioneer Subject Matter Expert assessor of the 4th Generation Government Model for Excellence Award Programs – UAE, Innovation Award, Emiratization Award and many others.

She Won the honor ship Medal for the best serving officer by UAE GHQ and the ADQCC "AL Shara Excellence Award" for the distinguish project team of 1st PT for Inspection Body in lifting equipment worldwide in corporation with LEEA 2015. Lead the project of Medical Laboratory Technical Requirements based on ISO15189 which approved to be the main technical requirements in UAE for accreditation of medical lab. An active member in many technical quality-working group within UAE like (National agenda of Healthcare, international Quality policy improvement by USAID) as well as regional and international speaker.



**Engineer Rab'ah Mufleh Al-Ajameh**  
Director General, Jordan Institute for Public Administration

Rab'ah enjoys 31 years of experience. She has a Bsc. In Chemical Engineering. She started her career in 1987 at the Ministry of Industry and Trade and continued at the Jordan Standards and Metrology Organization "JSMO" until 2008, after that she moved to work with the private sector as a consultant and expert on different projects funded by USAID focusing on enhancing business environment and strengthening of governmental organizations performance. Rab'ah worked in the fields of excellence, institutional enhancement and organizational transformation. She is a certified EFQM lead assessor, quality manager, and lead auditor; she worked as an assessor for different excellence award programs in Jordan and the UAE. She has expertise in different areas including policies & legislation development, project management, strategic planning, public sector governance, business process reengineering, innovation, sustainability & business continuity. She has extensive corporate building capacity experience including the development of training packages and learning initiatives with an understanding of global best practices in standardization, conformity assessment and excellence development. Rab'ah volunteer as a board member for the Jordan Society for Quality; a society focusing on promoting Quality and Excellence in Jordan. She is also a member of different societies working on social development.



**Fatima Butti Al-Muhairi**  
Director of Investment and Social Responsibility Department  
Community Development Authority  
Dubai, UAE

Fatima Butti Al-Muhairi is a strategic expert in social responsibility and community development. A leader who has an innate intelligence and a challenging spirit, proven capabilities in transforming strategic plans into reality and played a distinctive role in strategic planning in all Federal and local government sectors and contribute to the application and development of standards that distinguish a number of sectors, including the development of the social sector in the Emirate of Dubai. She works in the Community Development Authority in the field of social welfare and community development for a period of seven years during which she held several leadership positions such as a director of Department of Financial Benefit Management and a director of the Department of Investment and Social Responsibility was keen to seek financial support and aid from various private and public entities. Aside from her work in the government sector, she volunteered to work for a non-profit organization that seeks to support excellence and achieve quality in the private sector, which is the Dubai Quality Group which was established in 1994. She studied Higher Diploma in Business Administration at the Higher Colleges of Technology for female students in Dubai and completed a bachelor's degree in the college in the same specialization and after that she got a master's degree in global business management from the University of Wollongong Australian and is about to complete a PhD in social innovation.



**Dr. Nita Sukdeo**  
Full Time Senior Lecturer in Quality and Operations Management  
BTech Quality Programme Manager  
Department of Quality and Operations Management  
University of Johannesburg  
Gauteng, South Africa

Dr. Nita Sukdeo is currently a full time senior lecturer in the field of Quality and Operations Management, and the BTech Quality programme manager, in the Department of Quality and Operations Management, at the University of Johannesburg, Gauteng, South Africa. She obtained a Masters in Quality from the Durban University of Technology and a PhD in Engineering Management from the University of Johannesburg. She is an emerging young researcher in the field of total quality management and operations management. Her field of expertise also include quantitative analysis, quality management systems, quality auditing and risk assessment. She is a qualified Lead Auditor, proficient in ISO standards and certification. She is one of the directors of the Society for Operations Management in Africa (SOMA), as well as a professional member of the South African Society for Quality (SASQ).

### Panel on Lean Six Sigma - 2:30 – 4:00, Thursday (Ballroom)

#### Panel Chair



**Steven Sibrel**  
Senior Supplier Quality Manager, Harman / Becker, Novi, Michigan, USA  
Professional Development Chair and Past Chair – ASQ Greater Detroit

Steve Sibrel is a business process improvement trainer, coach and auditor with over 35 years of experience in the business and manufacturing world. He is currently working as Senior Supplier Quality Manager at Harman International, a manufacturer of audio and infotainment systems for consumer, professional, and automotive industries, with well-known brands such as JBL, Lexicon, Crown, Infinity, Mark Levinson, Becker and Harman-Kardon. Previously he held a number of engineering and management positions in diverse industries at Applied Materials (Semiconductor), NEC (Telecommunications) and Texas Instruments (Military). He has conducted over 200 supplier audits in North America, Europe, and Asia and is a Lead Auditor for ISO/TS16949, ISO9001, ISO13485, ISO17025, and 21CFR820. He has been the Chair for Professional Development for the ASQ Detroit section since 2008. He received the Distinguished Service Award in 2008 and the Leadership Award in 2013 from ASQ. Current ASQ Certifications held are Six Sigma Black Belt, Quality Engineer, Quality Inspector, Quality Auditor, and Manager of Quality/ Organizational Excellence. He is an adjunct faculty member at Macomb Community College. Steve has a BSEE degree from Rose Hulman Institute of Technology and an MSEE degree from Southern Methodist University.

#### Panel Speakers



**Dr. Souraj Salah**  
Process Improvement Manager  
Abu Dhabi Port, UAE

Dr. Souraj Salah is currently a full time Process Improvement Manager at Abu Dhabi Ports. He is an adjunct professor at Abu Dhabi School of Management and also at Hamdan Bin Muhammad Smart University (Teaching courses like: Japanese Quality, Quality Tools and Techniques, TQM Fundamentals, and Operations Management). He has over twenty years of industrial engineering experience in the logistics, contracting, services and manufacturing sectors. He earned his PhD from the University of New Brunswick in Canada. He published one book on integrated company-wide management system and more than twenty papers in various international journals and conference proceedings. He conducted benchmarking studies with General Electric and Boeing. He is also certified as a Black Belt by the Juran Institute and as a Lean Six Sigma Master Black Belt by Johnson Controls International in the USA and by Alignment Strategies in Canada. He is also certified as a Quality, Health, Safety, and Environment Management Systems (ISO 9001, ISO 14001, OHSAS 18001) Lead-Auditor by Beareau Veritas. Dr. Souraj won the United Arab Emirates Quality-professional-Award by the American Society for Quality (ASQ) in 2015.



**Dr. Saso Krstovski, MBB**  
Lean Manufacturing Coach /Six Sigma Master Black Belt  
Van Dyke Transmission Plant, Ford Motor Company, Michigan, USA

Dr. Saso Krstovski works for Ford Motor Company – Van Dyke Transmission Plant as a Lean Manufacturing Coach and Six-Sigma Master Black Belt. With over twenty years of service with Ford Motor Company, Dr. Krstovski has held a multitude of engineering assignments, which includes time working as a Test Engineer, Launch Test Engineer, and Electrical Control Engineer. During his time with Ford Motor Company, Dr. Krstovski has worked in several plant environments and skill teams such as Dearborn Tool & Die Plant, Information Technology, and has held front-line supervision roles managing hourly UAW-Ford production employees. This exposure to new work concepts within Ford has allowed Dr. Krstovski to amass a holistic approach to engineering. As such, Dr. Krstovski has gained an extensive understanding of the Six-Sigma methodologies. As a detail oriented and data-driven engineer, Dr. Krstovski is an invaluable contributor to Ford Motor Company. He is highly distinguished and skilled with problem identification and resolution to avoid time and cost expenditures. Dr. Krstovski recently joined Lawrence Technological University as an Adjunct Professor and is currently

teaching in the Engineering Department. Dr. Krstovski's research interests lie in the area of System Optimization. He continues to collaborate actively with researchers at several universities. Dr. Krstovski provides guidance globally to doctoral candidates on dissertation direction. He graduated from Lawrence Technological University with a Doctorate of Engineering in Manufacturing Systems (DEMS). In addition, to his doctorate degree, Dr. Krstovski has a Masters in Electrical Computer Controlled Systems and a Bachelor's of Science in Electrical Engineering from Wayne State University. Dr. Krstovski has authored several publications and scientific articles on various engineering topics.



**Sunil Thawani**  
Quality Indeed Consulting Ltd., Abu Dhabi, United Arab Emirates  
Member, Board of Directors, Dubai Quality Group

Sunil is a leading management professional with over 35 years of experience in TQM, Business Excellence, Corporate Governance, Strategy deployment, Re engineering, Service excellence in diverse industries such as e-Government, Social Housing, Manufacturing, Services, Healthcare, Oil & Gas, Banking, Education, etc. He has a successful track record of transforming/ building organizations which are highly customer focused, continually improving & differentiated in market place for excellence. Some of his leadership roles are:

- Addressed conferences locally, regionally & globally – UAE, Sweden, Mauritius, India, Indonesia, Azerbaijan, Bahrain, Nigeria, Slovenia, etc.
- International Consultant – Quality & Excellence, United Nations
- CEO of Quality Indeed Consulting, Member of the Board, Dubai Quality Group, 2019-2021.
- Member of the Board, American Society for Quality, 2016-2017. 1st from MENA.

- Recipient, ASQ Lancaster Medal, 2015, 1st in MENA in 30 years. Author, Business Excellence Awards – Strategies for Winning\*
- Fellow, American Society for Quality (ASQ). 1st in GCC. (2009). Jury member, Dubai Quality Award, Sheikh Khalifa Excellence Award
- Invited by United Nations to participate in international conferences on public services, innovation, governance, UN SDGs 2030
- Champions United Nations Sustainable Development Goals 2030. Presented and published 50 + technical papers and case studies in journals & conferences.

Sunil has trained thousands of professionals in Excellence, Customer Experience, Management Systems, Service Excellence, Benchmarking, Business Process Management etc. He has helped many organization to implement Quality & Excellence frameworks such as EFQM/ UAE 4th Generation Excellence Model/ United Nations Public Service Award/ Lean to enhance performance and create a culture of excellence, continual improvement and customer service. Sunil has travelled all over the world on motorcycle. He lives in United Arab Emirates.



**Fawzi A. Bawab, PhD**  
Partner and Senior Consultant, Meirc Training and Consulting, Dubai-UAE

Dr. Fawzi is a senior quality and strategy consultant with over 30 years' experience in Canada and the Middle East in the fields of TQM, Excellence models and various ISO models (9001, 14001, 16949) and Lean Six Sigma. He holds a PhD in Lean Six Sigma from Edinburgh Business School at Heriot-Watt University in the UK. He has conducted over 400 external ISO audits for organizations in different sectors worldwide. Fawzi has also trained and coached thousands of participants in different quality and continual improvement fields. He is a frequent keynote speaker at universities, professional conferences and corporate meetings. Fawzi has been involved in the implementation of more than 300 projects in areas of quality, excellence, Lean and Six Sigma resulting in savings exceeding USD 30 million. Building on his former experience with KPMG, BSI and IBM, Fawzi continues to support and coach organizations in achieving their business objectives through various training, coaching and consulting assignments focusing on business process improvement. His areas of competence include corporate quality systems, Six Sigma (black belt, green belt, champion), Lean, ISO, strategic quality planning, TQM, process improvement, leadership, Statistical Process Control (SPC), performance management and strategic management. Fawzi is a Certified Six Sigma Master Black Belt (CSSMBB) and a Kaplan-Norton qualified strategy practitioner. He is also a senior member of the American Society for Quality (ASQ), the American Institute of Industrial Engineers (IIE) and the American Society for Engineering Management (ASEM). He is also an ASQ Certified Manager of Quality/Organizational Excellence and a certified training Practitioner (CTP™) from the Institute of Performance and Learning, Canada.



**Neetu Choudhary**  
Executive Committee Member- Continuous Improvement Subgroup, Dubai Quality Group  
Team Leader – UAE Innovation Awards and Compliance Analyst, DP World  
Dubai, United Arab Emirates

## Panel on Healthcare Improvement - 4:30 – 6:00, Thursday

Panel Chair



**Dr. Mohammad T. Khasawneh, Ph.D.**  
Professor & Chair, Systems Science and Industrial Engineering  
Associate Director, Watson Institute for Systems Excellence  
Director, Healthcare Systems Engineering Center  
Graduate Program Director, Executive Master of Science in Health Systems  
Thomas J. Watson School of Engineering and Applied Science  
State University of New York at Binghamton, Binghamton, New York 13902, U.S.A.

## PANEL SPEAKERS



**Dr. Abdelaziz Berrado**  
Professor and Chair, Industrial Engineering  
EMI School of Engineering, Mohamed V University in Rabat, Morocco

Abdelaziz BERRADO is a Professor and Chair of Industrial Engineering in EMI School of Engineering at Mohamed V University in Rabat. He holds a Ph.D. in Decision Systems and Industrial Engineering from Arizona State University and an M.S. and a B.S./M.S. from San Jose State University and Ecole Mohammadia d'Ingénieurs school of Engineering, respectively. His research and teaching interests are focused in the areas of Data Science, Industrial Statistics, Operations and Supply Chain Modelling, Planning and Control with applications in healthcare systems and other industries. He focuses on developing frameworks, methods and tools for systems' diagnostics, optimization and control with the aim of operational excellence. Dr Berrado's work has led to several research papers and conference articles with local and international funding. In addition to academic work, he interacts with different Industries in the areas of Performance Management, Operations and Supply Chain Management, Machine Learning and Quality Engineering. He reviews for many journals and is member of INFORMS, IEOM and IEEE. Previously, he was also a senior engineer at Intel.



**Dr. Mohamed Adel Serhani**  
Full Professor and the Assistant Dean for Research and Graduate Studies  
College of Information Technology, United Arab Emirates University, Al Ain, UAE

Mohamed Adel Serhani is currently a Full Professor and the Assistant Dean for Research and Graduate Studies at the College of Information Technology, United Arab Emirates University, UAE. He received the Ph.D. degree in computer engineering from Concordia University, Canada, in 2006, and the M.Sc. degree in software engineering from the University of Montreal, Canada, in 2002. His research interests include smart connected health, non-invasive smart health monitoring, cloud for data intensive e-health applications, and services, SLA enforcement in cloud data centers, cloud federation and monitoring, Big Data quality assessment, and web services applications. Dr. Serhani has a large experience earned through his involvement and management of different R&D projects for the past 14 years. He served on several organizing and Technical Program Committees, including for instance three IEEE DEST, IEEE WiMob, IEEE IWCMC, WMNC, NDT and IIT. He delivered several keynote speeches, distinguished seminars, and tutorials in respected international conferences and events. He is the program Co-chair of the upcoming International Conference on Web Services (ICWS'20) which will be held this June, 2020 in Honolulu, Hawaii, USA. He was the program Co-chair of the IEEE conference on Innovations in Information Technology (IIT'13), Chair of IEEE Workshop on Web service (IWCMC'13), Chair of IEEE workshop on Web, Mobile, and Cloud Services (IWCMC'12), and Co-chair of International Workshop on Wireless Sensor Networks and their Applications (NDT'12). Dr. Serhani has published over 120 refereed publications including conferences, journals, a book, and book chapters.

Web, Mobile, and Cloud Services (IWCMC'12), and Co-chair of International Workshop on Wireless Sensor Networks and their Applications (NDT'12). Dr. Serhani has published over 120 refereed publications including conferences, journals, a book, and book chapters.



**Mohammad Mehedy Masud, Ph.D.**  
Associate Professor, College of IT  
United Arab Emirates University, Al Ain, UAE

Dr. Mohammad Mehedy Masud is currently an Associate Professor at College of Information Technology (CIT) at United Arab Emirates University (UAU). Prior to joining UAU in January 2012, Dr. Masud worked at the University of Texas at Dallas as a Research Associate for 2 years. He received his Ph.D. degree in Computer Science from University of Texas at Dallas, USA, in December 2009. Dr. Masud's research interests include Big Data mining, data stream mining, machine learning, healthcare data analytics and e-health. His research also contributes to cyber security (network security, intrusion detection, and malware detection) using machine learning and data mining. He has published more than 50 research articles in high impact factor journals including IEEE Transactions on Knowledge and Data Engineering (TKDE), Journal of Knowledge and Information Systems (KAIS), and top tier conferences including IEEE International Conference on Data Mining (ICDM). His is the lead author of the book "Data mining tools for malware detection" and the principal inventor of a US Patent. He is the principal investigator of several prestigious research grants funded by government and private funding organizations.

**Prof. Ma. Janice J. Gumasing, PIE**  
Professor, School of Industrial Engineering and Engineering Management, Mapua University, Manila, Philippines



Prof. Ma. Janice J. Gumasing, PIE is a Professor of School of Industrial Engineering and Engineering Management at Mapua University. She has earned her B.S. degree in Industrial Engineering and Masters of Engineering degree from Mapua University. She is a Professional Industrial Engineer (PIE) with over 15 years of experience. She is also a professional consultant of Kaizen Management Systems, Inc. She has taught courses in Ergonomics and Human Factors, Cognitive Engineering, Methods Engineering, Occupational Safety and Health and Lean Manufacturing. She has numerous international research publications in Human Factors and Ergonomics. Her research papers have been awarded as Best Track Paper in 2014 IEOM International Conference in Bali, Indonesia; 2018 IEOM European Conference in Paris, France; 2019 International Conference on Industrial Engineering and Applications in Tokyo, Japan; and 2019 International Conference on Management Science and Industrial Engineering in Phuket, Thailand. She has also been awarded as Woman in the Industry and Academe during the 2019 International Conference of Industrial Engineering and Operations Management (IEOM) held in Bangkok, Thailand.

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**Dr. Md. Haider Ali Biswas**  
Professor, Mathematics Discipline, Science Engineering and Technology School  
Khulna University, Khulna-9208, Bangladesh

Dr. Md. Haider Ali Biswas is currently affiliated with Khulna University, Bangladesh as a Professor of Mathematics under Science Engineering and Technology School and he served as the Head of Mathematics Discipline from 2015 to 2018. Prof. Biswas obtained his B Sc (Honors) in Mathematics and M Sc in Applied Mathematics in the year 1993 and 1994 respectively from the University of Chittagong, Bangladesh, M Phil in Mathematics in the year 2008 from the University of Rajshahi, Bangladesh and PhD in Electrical and Computer Engineering from the University of Porto, Portugal in 2013. He has more than 20 years teaching and research experience in the graduate and post-graduate levels at different public universities in Bangladesh. He published three books, three book chapters and more than 100 research papers in the peer reviewed journals and international conferences. Prof. Biswas has worked at several R & D projects in home and abroad as PI and/or Researcher, particularly he is conducting different research projects funded by the Ministry of Science and Technology, Bangladesh, University Grants Commission of Bangladesh and The World Academy of Science (TWAS), Trieste, Italy. His present research interests include Optimal Control with Constraints, Nonsmooth Analysis, Mathematical Modeling, Mathematical Biology and Biomedicine, Epidemiology of Infectious Diseases. He is the life/general

members of several professional societies and/or research organizations like Bangladesh Mathematical Society (BMS), Asiatic Society of Bangladesh (ASB), Institute of Mathematics and its Applications (IMA), UK, European Mathematical Society (EMS) and Society for Mathematical Biology (SMB). Dr. Biswas was the General Secretary of Mathematical Forum Khulna in 2013-2015. Dr. Biswas organized several national and international seminars/workshops/conferences in home and abroad and he has been working as editor/member of editorial boards of several international peer-reviewed journals. Professor Biswas contributed as Keynote/Invited/Plenary/Panel speaker at several international conferences/seminars/workshops in home and abroad. Professor Biswas has been nominated as the Member of the Council of Asian Science Editors (CASE) for 2017-2020 and the Associate Member of the Organization for Women in Science for the Developing World (OWSD) since 2017. Recently, Professor Biswas has been elected as a Member of Executive Committee of Bangladesh Mathematical Society (BMS) for the year 2020-2021, and also nominated as the Associate Editor of the international journal GANIT- an official journal of Bangladesh Mathematical Society (BMS) for the year 2020-2021. Dr. Biswas has been nominated as a Member of Executive Committee of the IEOM Society, Bangladesh Chapter and also serving as the Treasurer of the IEOM Society, Bangladesh Chapter. He is also serving as the Faculty Advisor of the IEOM Society Khulna University Chapter. Professor Biswas is presently serving as the President of Bangladesh Society for Mathematical Biology (BSMB) for the year 2020-2021.

# IEOM

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**11<sup>th</sup> International Conference on Industrial Engineering and Operations Management**  
**March 9 - 11, 2021, Singapore**  
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## Parallel Sessions

March 8-9 (Sunday and Monday) - Lean Six Sigma Green Belt (LSSGB) Certification Workshop (Certification Exam – 5:00 – 7:00 pm, Monday)

### Tuesday, March 10, 2020

Rooms	Ballroom	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8
8:00		Global Engineering Education I	Industry 4.0 / Solutions I	Undergraduate Paper Competition	Graduate Student Paper Competition	Operations Research	Engineering Management	Project Management	Transportation and Traffic
9:30	<b>Welcome Address:</b> - Ballroom								
9:40	<b>Opening Keynote I: Mr. Osman Sultan</b> , CEO, Emirates Integrated Telecommunications Company, (du), UAE – Ballroom								
10:20	<b>Opening Keynote II: Dr. Oliver Elbracht</b> , Vice President Siemens / Managing Partner Siemens Consulting Middle East, Dubai, UAE								
11:00	Networking Break – Foyer Area								
11:30	<b>Keynote III: Dr. Rubén Elvira Herranz</b> , Services Program Manager, Airbus Defence and Space, Military Aircraft, Madrid, Spain								
12:10	<b>Keynote IV: Professor Ammar Kaka</b> , Provost and Vice-Principal, Heriot-Watt University, Dubai, UAE – Ballroom								
1:00	Networking Lunch Buffet - Ballroom								
1:30	<b>IEOM Student Chapter Presentations</b> - KFUPM, Zagazig University, University of Johannesburg and University of Science & Technology of Fujairah (USTF), UAE								
2:30	Panel I Industry 4.0	Global Engineering Education II	Industry 4.0 / Solutions II	Undergraduate Student Paper Competition	Automotive Manufacturing and Automation	Lean Six Sigma	Operations Management	Case Studies	Logistics
4:00	Networking Break at Exhibition Hall								
4:30	Panel II GEE	Competitions	Industry 4.0 / Solutions III	Competitions	Optimization	Quality Control	Supply Chain Management	Construction Management	Business Management

### Wednesday, March 11, 2020

Rooms	Ballroom	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8
8:00		Global Engineering Education IV	Industry 4.0 / Solutions IV	Systems Dynamics	Modeling and Simulation	Cybersecurity and AI	Occupational Safety & Health	Waste Management	Facilities and Plant Layout
9:40	<b>Keynote I: Dr. Ibrahim Alharkan</b> , General Director for King Salman Institute for Entrepreneurship (KSIE), King Saud University, Riyadh, KSA								
10:20	<b>Keynote II: Dr. Ali Diabat</b> , Global Network Professor of Civil and Urban Engineering, New York University Abu Dhabi, UAE – Ballroom								
11:00	Networking Break								
11:30	<b>Keynote III: Dr. Nicklas Dahlstrom</b> , Human Factors Manager, Emirates Airlines, Dubai, UAE – Ballroom								
12:10	<b>Keynote IV: Dr. Mohammad T. Khasawneh</b> , Professor & Chair, Systems Science and Industrial Engineering, State University of New York at Binghamton, USA – Ballroom								
1:00	Networking Lunch Buffet - Ballroom								
1:30	<b>Lunch Keynote: Harry Kasuma (Kiwi) Aliwarga</b> , CEO and Co-Owner, UMG Myanmar, Karet Kuningan Jakarta, Indonesia - Ballroom								
2:30	Panel III SCM & Logistics	Global Engineering Education V	Industry 4.0 / Solutions V	Sustainability in Supply Chain	Construction Management	Energy	Human Factors	Healthcare Operations and Services	Reliability and Six Sigma
4:00	Networking Break at Exhibition Hall								
4:30	Panel IV WIIA	Global Engineering Education VI	Industry 4.0 / Solutions VI	Supply Chain Management	Data Analytics	Product Design and Development	Operations Management	Production Planning	Entrepreneurship
6:00 – 8:00 pm: Poster Session, Senior Design Poster Competition, Student Chapter Activity Poster Presentations and Faculty Position Networking									

### Thursday, March 12, 2020

Rooms	Ballroom	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8
8:00		Global Engineering Education VII	Industry 4.0 / Solutions VII	Supply Chain Management	Innovation	Sustainable Manufacturing	Business Management	Artificial Intelligence	TQM and Technology Management
9:40	<b>Keynote I: Dr. Yousef Al-Assaf</b> , President, Rochester Institute of Technology (RIT) – Dubai, Dubai Silicon Oasis, Dubai, UAE								
10:20	<b>Keynote II: Prof. Dr. Bhaskar Bhandarkar</b> , Director General, Institution for Innovation, Industrial Engineering & Entrepreneurship Principal Investigator IUSSTF India and Former Chairman of IIIE - Indian Institute of Industrial Engineers								
11:00	Networking Break at Exhibition Hall								
11:30	Plenary Dr. Sayyad Zahid Qamar, SQU	Global Engineering Education VIII	Industry 4.0 VIII - Operations Excellence	Engineering Management	Case Studies	Manufacturing	Modeling and Simulation / AI	Energy	Operations Research
1:00	Networking Lunch Buffet - Ballroom								
1:30	<b>IEOM Student Chapter Presentations</b> - MAPUA University, University of West Bohemia, Pilsen, P.D.A. College of Engineering, India, UNS, Indonesia and Shipbuilding Institute of Polytechnic Surabaya								
2:30	Panel V Lean Six Sigma	Global Engineering Education IX	Industry 4.0 / Solutions IX	Supply Chain Management	Operations Research	Environmental Engineering	Business Management	Human Factors and Ergonomics	Operations Research
4:00	Networking Break at Exhibition Hall								
4:30	Panel VI Health Care	Global Engineering Education X	Industry 4.0 / Solutions X	Inventory Control	Decision Sciences	Information Systems and IT	Quality Control and Quality Management	Manufacturing and Maintenance	Financial / Engineering Economy
7:00 – 10:00 pm, Thursday : <b>Conference Awards Dinner</b>									
<b>Awards Keynote: Professor Charles Mbohwa</b> , Pro-Vice Chancellor Strategic Partnerships and Industrialisation, University of Zimbabwe									

# Development of Artificial Intelligence (AI) to Improve Agriculture, Business, and Education in Indonesia by UMG IdeaLab

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## Abstract

Artificial Intelligence (AI) has now achieved the ability to undertake a wide variety of tasks, ranging from general to specific tasks, including playing games, verifying mathematical algorithm, composing poetry, driving in heavy traffic, and even identifying symptoms of illness. UMG IdeaLab, that was established in 2018 in Jakarta, Indonesia, is a tech start-up incubator that has been seeking collaboration with many working sectors, including agriculture, business, and technology. More specifically, UMG IdeaLab has been supporting the advancement of e-commerce, agricultural company solution, AI robotics, AI education solution, speech recognition engine, and autonomous drone. Its mission is to develop Indonesia through technological solutions. To date, UMG IdeaLab has 8 AI companies from 33 affiliated companies that are considered innovative and provide solutions for Indonesia. The affiliation company such as PT. MSMB that provide the software and application for helping farmers to improve their agricultural productivity. This paper aims to provide a proposal for the development of AI in the business sector, particularly e-commerce in Indonesia.

### Keywords:

Artificial Intelligent, Business solution, UMG IdeaLab, Agricultural Application, Multi Finance Company.

## 1. Introduction

Artificial Intelligence (AI) has prominent roles in today's world, it helps with the widespread deployment of practical speech identification, device translation, autonomous machine, and household robotics. It is a great deal of empirical progress, specifically in the enhancement of probabilistic learning, machine learning, internet appliance, and computer vision. The advancement of AI has even been portrayed in popular culture, such as in Steven Spielberg's film titled *A.I. Artificial Intelligence* showcases how a robotic boy is capable of expressing emotions and feelings of love to his

adoptive human parents. At the same time, scientists who study intelligent machines also foresee a future filled with independent, thinking robots, and computer companions. Thus far, AI has covered a wide variety of tasks, ranging from general (learning and perception) to specific tasks, such as playing games, verifying mathematical algorithm, composing poetry, driving a vehicle on a busy road, and identifying symptoms of illness.

AI development is also necessary in improving agriculture—an important sector in Indonesia. Indonesian agriculture output has been stagnant and its rates keep on declining due to shortages of labor, chemical farming that damages land structure, animal attacks, and the harrowing state of the farmers' economic welfare. UMG IdeaLab offers some solution for Indonesian agriculture problems by utilizing AI technology.

UMG IdeaLab, that was established in 2018 in Jakarta, Indonesia, is a tech start-up incubator that has been seeking collaboration with many working sectors, including agriculture, business, and technology. More specifically, UMG IdeaLab has been supporting the advancement of e-commerce, agricultural company solution, AI robotics, AI education solution, speech recognition engine, and autonomous drone. Its mission is to develop Indonesia through technological solutions. The purpose of this paper is to provide a proposal for the development of AI in the business and e-commerce in Indonesia.

## 2. Literature Review

Artificial Intelligence (AI) is the study of the computation that make it possible for machines to perceive, reason, and act. Based on the definition, artificial intelligence is detached from the field of psychology as it emphasizes more on computation, it also differs from most of computer science because of the emphasis on perception, reasoning and action. When it comes to goals, artificial intelligence can be considered as part of engineering and part science (Russel, 2016).

The learning agent in AI is capable of obtaining precepts from its surrounding and performing actions. Every learning agent provides goals that maps the percept sequences to actions and finds many ways to represent these actions, such as reactive agents, real-time planners, and decision-theoretic systems. In this case, learning refers to the way in which the machine is capable of adapting and adjusting itself to new environment beyond the knowledge given by its designer (Barr & Feigenbaum, 2014).

AI is one of the newest fields in science and engineering. A rationalist approach involves a combination of mathematics and engineering, such as in the Turing Test approach (acting humanly), the cognitive modeling approach (thinking humanly), the “laws of thought” approach (thinking rationally), the rational agent approach (acting rationally) as shown in figure 1 (Russel, 2016).

<p><b>Thinking Humanly</b></p> <p>“The exciting new effort to make computers think . . . <i>machines with minds</i>, in the full and literal sense.” (Haugeland, 1985)</p> <p>“[The automation of] activities that we associate with human thinking, activities such as decision-making, problem solving, learning . . .” (Bellman, 1978)</p>	<p><b>Thinking Rationally</b></p> <p>“The study of mental faculties through the use of computational models.” (Chamiak and McDermott, 1985)</p> <p>“The study of the computations that make it possible to perceive, reason, and act.” (Winston, 1992)</p>
<p><b>Acting Humanly</b></p> <p>“The art of creating machines that perform functions that require intelligence when performed by people.” (Kurzweil, 1990)</p> <p>“The study of how to make computers do things at which, at the moment, people are better.” (Rich and Knight, 1991)</p>	<p><b>Acting Rationally</b></p> <p>“Computational Intelligence is the study of the design of intelligent agents.” (Poole <i>et al.</i>, 1998)</p> <p>“AI . . . is concerned with intelligent behavior in artifacts.” (Nilsson, 1998)</p>

Figure 1. Some definitions of artificial intelligence organized into four categories (Russel, 2016)

### 2.1. Expert Systems

Early AI researchers understand that the human brain works like a computer. It receives data and information then translates it into symbols. Next, the brain changes it back to a discoverable thought. The earliest invention of AI,

although very rigid, was actually a crucial achievement. The software is known as an expert system applied for business use. The expert system is an AI software that emulates the science and decision-making process of a person with proficiency in a specific area. The expert system contains two segments—a knowledge base and an inference engine (Russel, 2016). It is capable of calculating options or pointing to alternatives to help people make the best decision.

## **2.2 Artificial Neural Network (ANN)**

Different from traditional AI expert systems which are specialized and inflexible, ANN program are trainable and more adaptable. They can process a huge range of data and information. They can also learn from their mistakes. This type of AI is best for analyzing and recognizing patterns. Some police departments use an ANN search engine called Coplink to search multiple case files from different locations and criminal database to find patterns to seemingly unrelated crimes. Coplink has successfully helped in catching the two snipers in the Washington, D.C., area in 2002. The flow of artificial Neural Network System is shown in figure 2 (Thomas, 2005).

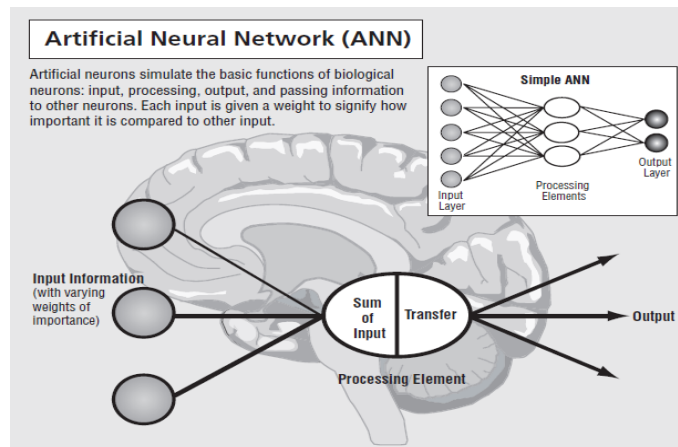


Figure 2. Artificial Neural Network System

## **2.3. Logic and Fuzzy Logic**

Fuzzy logic system works best with flexible rules. It can process applicable rules and generates continuous, fuzzy output. The weather forecast, for example, employs fuzzy logic. The fuzzy logic system can identify when the air temperature is being partly hot instead of simply hot or cold. It can also indicate temperature in the form of a percentage. Fuzzy logic programs are used to monitor the temperature of the water inside washing machines, to control car engines, elevators, and video cameras, and to recognize the subtle differences in written and spoken languages (Thomas, 2005).

## **2.4. Alien Intelligence**

AI is faster and has a larger capacity for storage and memory than any human. A human neuron fires in one-thousandth of a second, but a computer transistor can fire in less than one-billionth of a second. Such a computer can process vast amounts of data that would bury a human processor and can quickly find patterns invisible to the human eye. The logical processes that some systems go through are so complex that even the best programmers cannot understand them. These computers, in a sense, speak a language that is understood only by another computer. More sophisticated games use AI software to analyze their human player's gaming style. These programs actually learn to refine the game characters' social interactions so they can adapt to the human player's behavior (Thomas, 2005).

## **2.5. E-Commerce**

Nowadays, a person does not have to get into a car to go shopping because sophisticated AI applications and the Internet make it possible to do so. As online purchasing gets more popular, companies compete to find ways to maintain the growth of e-commerce and maximize their own market share and profits. One way is with an AI program called a collaborating filter that enables companies to analyze their customers' buying patterns. Instead of employing humans to help consumers, many businesses are now relying on automated help desks that use artificial intelligence

system called case-based reasoning that works to match up the customer's problem to similar problems stored in its memory. It can also apply the solution that works best in the past to the current problem (Thomas, 2005).

## **2.6. AI in Business**

Artificial Neural Network (ANN) expert system is used not only to make money but also to save money. The artificial neural networks compare existing patterns to previous situations and eventually "learn" what works and what does not as the program digests a lot more data. They can also seek out connections between data that a human programmer may not have thought of. Information on credit card applicant's buying habits, income, number of children, and residence are fed into the system. The system can also identify the type of customers who have committed credit card fraud. Over time, as patterns change, the ANN expert system adapts and follows the new patterns that emerge to highlight those customers who are a good credit risk and those who are not. AI can also maximize the benefits of gold trading and gold price prediction that is needed for traders. These days people can invest on gold digitally, and there is where AI can play such an important role to influence the price of gold and find prediction for its prices in the future (Priyadil, Santony, and Na'am, 2019).

## **2.7. Digital in Medical World**

Expert systems are also used in the medical field to help doctors diagnose patients. A diagnostic expert system called MYCIN can help diagnose certain blood infections. Researchers had tested the accuracy of MYCIN by comparing its diagnosis with five prestigious staff members of the Stanford School of Medicine. The doctors were given ten written medical histories and asked to diagnose the patients and give their recommendations. The researchers found that the MYCIN expert system performed significantly better than the human panel. Special machines that have been dubbed robot scientists can formulate hypotheses, design experiments, and interpret the results as well as human scientists can. Another AI medical machine can even scan biopsy slides which is normally can only be observed using a microscope.

## **2.8 AI, Robotics and Industries**

Robots are hydraulically powered and programmed to move in repeated patterns with high precision. Automobile manufacturers soon replaced assembly line workers with Unimate, the first industrial robot, which could perform the most exhausting and physically demanding tasks. In order for industrial robot computers to have precise mechanical movement, mathematical and geometric calculation must be hardwired into it (Thomas, 2005).

Today, robotic arms are used in almost every type of industry. They are especially useful in places where humans are prone to injure themselves or damage the products. Smaller robotic arms, for example, are useful in the sterile environment of a silicon chip factory, a line of work where human workers mostly struggle because they need to wear head-to-toe coveralls so that they will not contaminate the product with dandruff, flaking skin cells, or dirt. Industrial robotic arms are also commonly utilized to work with toxic material where humans cannot deal with without risking their safety, such as in a nuclear reactor (Thomas, 2005).

## **2.9 AI in Education**

Accessibility of the internet and smartphones for children in Indonesia opens up the opportunity to use mobile games as an educational tool, especially in math and science—some of the subjects that many elementary students are struggling with. Learning, from constructivism point of view, can be understood as achieving understanding through active discovery (Mayes 2007). Constructivism learning theory perceives students as self-regulated learners, who are motivated by learning itself, not only by grade or other's approval. The Learner-Centered Psychological Principles describes learner as those who are actively seeking knowledge by (1) reinterpreting information and experience for himself or herself, (2) being self-motivated by the quest for knowledge, (3) working with others to socially construct meaning, and (4) being aware of his or her own learning strategies and capable of applying them to new problems or circumstances (Slavin, 2003). Therefore, mobile games will be a strategic approach that is much needed to encourage students' intrinsic motivation to learn.

## **3. Solution**

The growth of startups in some cities of Indonesia will open opportunities to further improvement for the Indonesia's digital economy. This condition is in line with the Government's vision to place Indonesia as the center of digital economy in Southeast Asia in 2020 (Ministry of Communication and Information of Indonesian Republic, 2015). In



the field of agriculture UMG IdeaLab offers an integrated and smart logic solution starts from planting, informing seed availability, providing information about labor, production, and quality control by utilizing AI technology.

UMG IdeaLab has supported 33 affiliated companies that are considered innovative and provide solutions for Indonesia. UMG IdeaLab's efforts to focus on Indonesian startups were shown seriously by providing funding to startups, such as PT. MSMB (agricultural AI solution), Widya Wicara, Widya Robotic (AI Robotic), Frogs (Autonomous Drone), Artificial Intelligence Center Indonesia (AICI – AI education in university), Bahasakita (Speech Engine in Bahasa Indonesia), Botika (Chatbot AI), Skiloka (for AI Training and Workshop).

PT. Mitra Sejahtera Membangun Bangsa (MSMB), UMG IdeaLab's affiliated company, created integrated software and application to enable farmers to sell their product to the customers, increase farming productivity, and provide all farming data information. MSMB won in many start-up competitions in Indonesia and worldwide, including being the finalist of Intellectual Property Innovation and Entrepreneur Competition Global (IPIEC Global) in Shanghai, China. PT Mitra Sejahtera Pembangunan Bangsa (MSMB) which was established on February 15, 2018 has a vision to be a technology pioneer in agriculture, animal husbandry, fish farming and farmers education of technology in Indonesia. MSMB is one of the startups chosen by the Asian Development Bank (ADB) and Bappenas as partners in implementing the Leveraging ICT for Irrigated Agricultural Extension program in some cities, such as Pasaman at West Sumatra and Sukabumi at West Java in Indonesia.

In agricultural AI solution, the data from the RiTx Water Discharge Sensor is processed to determine the right water treatment and planting system that is in accordance with the amount of water available in real time. Water Debit Sensor can detect, measure, and record water levels and water currents and send data to a server to make the information accessible through mobile application in real time. This RiTx Soil and Weather Sensor can inform the accurate soil conditions and current weather forecasts for the next eight days. This tool can detect the temperature, soil moisture, pH (acidity) of the soil, EC (electrical conductivity) of the soil, relative humidity, air temperature, wind speed and direction, and even rainfall to determine the appropriate treatment of the land. Sensors can also accurately record data about the condition of agricultural weather (agro-climate) and agricultural land (soil). Therefore, by making this information available on mobile application, farmers will be able to tend the needs of its plantation and anticipate situations for successful harvests.

RiTx Drone Surveillance from Frog Company is also making it easy for plantation mapping, agriculture, and mining. You can map land fertility and crop conditions, crop density on the land, irrigation paths and landslide potential, as well as agricultural potential. RiTx Drone has the ability to determine whether the land is suitable for rice, oil palm or corn fields. It is equipped with RGB and NIR cameras that can produce 2D and 3D maps as well as soil and plant fertility maps. With RiTx Drone Sprayer, fertilizers and pesticides can be spread on an area of 1 ha in just 15 minutes, which is more effective and efficient compared to manually doing it with hands. The drone can carry as much as 20L fertilizer, and it can cover 1 ha in 10 minutes. The spraying effectiveness is at 70 percent, and thus, it can reduce the cost of spraying services up to 30 percent.

#### **4. Conclusion**

The development of artificial intelligence (AI) has been helping humans doing many jobs more efficiently. The fact that AI applications can be used to optimize farming, manufacturing, medical care, household work, and education indicate its significant role in our today's society. The UMG IdeaLab has been supporting the enhancement of AI in order to solve humans' problems in many sectors, including business and agriculture. The affiliated company, such as PT. MSMB, for instance, is capable of providing the software and applications to help the farmers increase their agricultural productivity. UMG IdeaLab also has Crowde application, a peer-to-peer lending platform, which enables people to invest in local farmers. The startup companies funded and supported by UMG IdeaLab has won many awards, both nationally and internationally. In the future, UMG IdeaLab aims to help university students to learn more about artificial intelligence, such as robotic, startup business, and applications.

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## **Biographies**

**Harry Kasuma (Kiwi) Aliwarga** is a chief executive officer and co-owner of UMG Myanmar, one of the country's leading business conglomerates. Born in Jakarta, Indonesia, Mr. Aliwarga graduated from the Institute of Technology of Indonesia (ITI) in 1992 with a degree in industrial engineering and later received a master's degree in civil engineering at the Asia Institute of Technology in Thailand. Kiwi Aliwarga began his professional career in the business development division at Astra International, one of Indonesia's largest trading companies, where he worked from 1992 to 1995. He went on to become business development manager at United Tractors-Indonesia (UT) before founding UMG Myanmar in 1998 with his partner MarLar Win. Mr. Aliwarga has set the ambitious goal of making UMG a billion-dollar company by 2020, by relying on three essential pillars: people, leadership, and the relentless pursuit of excellence.

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