MSA University
October University for Modern Sciences and Arts
Established by Dr. Nawal El Degwi in 1996

Under the auspices of Dr. Nawal El Degwi
Head of Board of Trustees

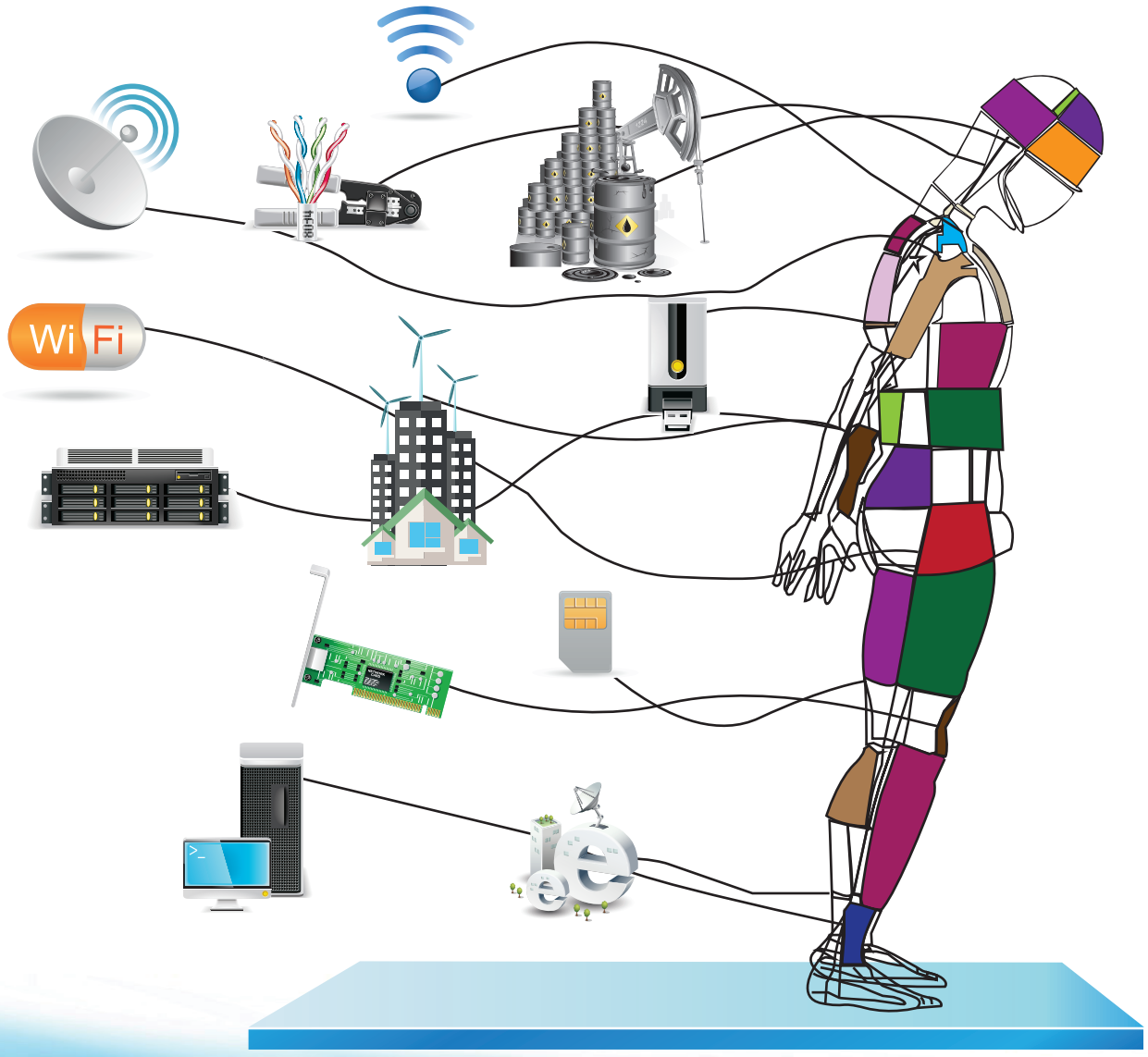
Second Annual MSA Workshop on Advances in Communication and Electronic Systems

ESE Workshop 2018

URL: http://msa.edu.eg/msauniversity/ese-workshop-2018

29th April 2018

October University for Modern Sciences and Arts (MSA), 6th of October, Egypt



Message from the Dean of Engineering

On behalf of the Faculty of Engineering, and the Communication Systems Department, MSA University, I would like to welcome all of you to the "Second Annual MSA Workshop on Advances in Communication and Electronic Systems".

This second workshop comes, after a very successful one held one year ago, to provide you and our graduates with entrepreneurial and creative experience; and to allow you and our graduates to become highly adaptable to new and ever-changing workplace environments, possessing skills and knowledge highly sought after by employers, particularly in the area of critical thinking and advanced communication and research.

The variety of disciplines that will be discussed in this workshop will provide you with the ability to grapple with important challenges facing our society, and help to shape thinking about social issues at a local, national and international level, and evolving new views of and for the world through rigorous self-reflection and making.

I hope that you learn a lot and have a great experience as well.

Nahed Sobhi
Dean, Faculty of Engineering
MSA University

Message from the ESE Department Head

It gives me great pleasure to welcome you to our “Second Annual MSA Workshop on Advances in Communication and Electronics”. Our first workshop was offered last academic year with remarkable success. We are trying to bring the latest technology in a concise way so that you will be able to dive in further. Last year, our main target was focused on IoT, Electronics in Agriculture and Satellites. As the mobile service providers have just introduced the 4G facilities in Egypt, we are inviting a distinguished keynote speaker from Portugal to deep further on the 5G and what we will expect in more features.

Since one of our top national projects is the cultivation of 1.5 acres, mostly from the desert, we will continue offering the latest in how electronics and communication can pave the way to achieve this goal. In addition, a talk on the very new and hot topic on “Cloud Computing” will be offered. This topic is and will be for some time of significant interest because nowadays, clients are becoming so thin leaving most of processing remotely. Acknowledging the importance of industrial control, we will also offer a talk on "Advances in Industrial Projects Based Automated Systems". Moreover, a talk on advances in Optical Fiber Sensors" will be given.

In order to maximize the mutual benefits gearing academia with industry, a special poster session will be organized, where some of our recent projects executed at MSA will be displayed. In this regard, our students who are going to graduate soon will be registering for this workshop.

If you are a technical telecom expert, manager or planner, attending this workshop will be very beneficial to you. In addition to scanning over the new trends in communication and electronics, you will have the chance to meet a variety of people from academia and industry.

This workshop will only be of one day, so that your work will not be delayed. All you need is to register on the day of the conference, or preferably, pre-register through the following link:

http://msa.edu.eg/msauniversity/ese-workshop-2018

Looking forward to seeing you.

Dr. Samy El-Hennawey
Professor and Head, Electrical Systems Engineering
MSA University

Workshop Objectives

The workshop introduces to the participants of practicing engineers, managers and planners recent and advanced developments in some areas of the field Telecommunication and Electronics. It allows them to interact with world class speakers. In addition, it is an opportunity for them to meet in one event and exchange views. In addition, it is an opportunity for MSA senior students of the specialty to get an insight of the practical arena and what is new in it.

Who Should Attend

Practicing engineers at various levels as well as technical and product managers in addition to planners working in subjects related to the Telecommunication and Electronics field. The workshop is free offered complimentary by MSA. However, registration is required in advance. Please submit your registration application through the link below:

http://msa.edu.eg/msauniversity/ese-workshop-2018

The deadline for submitting the registration application is:

29th April 2018

Notification of accepted registration will be sent by email to applicants.

Workshop Venue

The SSB Building, MSA University Campus, Wahat Road, 6th of October City

MSA will provide its busses for transportation to and from MSA Campus. Also, catering will be provided to all participants. Workshop record will be handed to participants.

SECOND ANNUAL MSA UNIVARSITY WORKSHOP ON
ADVANCES IN COMMUNICATION AND ELECTRONIC SYSTEMS

29 April, 2018

	Time	Location	Session
	8:30 – 09:00	SSB Entrance	**Registration**
Morning	09:00 – 09:30	SSB Hall 1	**Opening Talk** Dean Faculty of Engineering Prof. Nahed Sobhy Head of ESE Department Prof. Samy El Hennawy
	09:30 – 10:10	SSB Hall 1	Session 1 ***4G to 5G: The path, the challenges and the future*** Dr. Ayman Radwan, Universitário de Santiago, Portogal
	10:10 – 10:50	SSB Hall 1	Session 2 ***Introduction to Cloud Computing*** Dell-EMC Representative
	10:50 – 11:30	SSB Hall 1	Session 3 ***Communication and Electronics in Agriculture*** Dr. Said Mabrouk, MSA University, Egypt
	11:30 – 12:30	SSB Entrance	**Recent distinguished MSA projects Poster Session**
Afternoon	12:30 – 13:10	SSB Entrance	Coffee Break
	13:10 – 13:50	SSB Hall 1	Session 4 ***Optical Fiber Sensors: Concept overview and IoT applications*** Dr. Fatima Domingues, Universitário de Santiago, Portogal
	13:50 – 14:30	SSB Hall 1	Session 5 ***Advanced PLC projects in Egypt*** MAS Trading – Seimens System Integrator Representative
	14:30 – 15:30	SSB Hall 1	***Closing Session & Best Project Award*** MSA Chairman of the Board of Trustees Dr. Nawal El Degwy MSA President Prof. Khayri Abd Elhameed Dean Faculty of Engineering Prof. Nahed Sobhy Head of ESE Department Prof. Samy El Hennawy

WORKSHOP SPEAKERS

Dr. Ayman Radwan

Senior Researcher and EU Project Coordinator, Instituto de Telecomunicações (Institute of Telecommunications), Aveiro, Portugal

Dr. Ayman Radwan is mainly working in the areas of future mobile communications, concentrating on 5G and enablers of IoT.

Dr. Radwan received his Master of Applied Science (MASc) from Carleton University (Ottawa, Canada) and his Ph.D. from Queen's University (Kingston, Canada).

In January 2010, Dr. Radwan joined the Instituto de Telecomunicações and since then has been intensively active in European projects, coordinating and technically managing multiple EU collaborative projects. He is currently the coordinator of the CELTIC Plus project "MUSCLES" and the Project Manager of the H2020 ITN-SECRET; two projects addressing challenges in future generations of mobile communications, concentrating on virtualization, network slicing and small cells, as enablers of future IoT and ehealth applications. Dr. Radwan has also acted as the Technical Manager of the FP7 Project "C2POWER" and the Coordinator of the CELTIC Project "Green-T".

Radwan is considered an expert in the field of 5G and future mobile communications, with specific concentration on radio resource management and green communications. His recent research interest is focused on Internet of Things, specifically e-Health and Intelligent Transportation Systems.

He is also a Senior IEEE member, very active in organization and chairing of multiple conferences, as well as editing of multiple issues in high impact factor journals.

Omar Badr

Sr. Analyst, DELL-EMC Company

Omar joined the VPlex team three years ago; he worked as Google Apps Implementation Engineer at Cloudipedia, He graduated from ITI Cloud Architecture Track and AAST Electronics and communication engineering.

Dr. Said Abdel Moniem Ahmed Mabrouk

Chief Researcher/Agriculture Research Center/Ministry of Agriculture and Land Reclamation.

Lecturer/Faculty of Engineering/Modern Sciences and Arts University

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Education

- Ph.D. in Computer Science and Information systems, Computer Science Dept., Institute of Statistical Study and Research (ISSR), Cairo Univ., Dec 1995.
- M.Sc. in Computer Science and Information systems, Computer Science Dept., ISSR, Cairo Univ., Aug 1989.
- Postgraduate Diploma in Computer Science and Information Systems, Science and Information systems, Computer Science Dept., ISSR, Cairo Univ., May 1985.
- B.Sc. Electrical Engineering, Air Born Equipment, Military Technical Collage, Cairo, EGYPT – 1975

Past Position

- Several posts as Operation and Maintenance engineer as well as Chief of Engineers for Aircrafts communication,

Navigation, and Surveillance Systems. (May1975 - Jan2002).

- Head of Research and Development Department, EGYPTIAN AIR FORCE (EAF) (Jan2002 - Jul2004).
- Head of Aircrafts Ground Equipment Department, EGYPTIAN AIR FORCE (EAF) (Jul2004 - Jul2006).
- Head of Aviation Engineering Department, EGYPTIAN AIR FORCE (EAF) (Jun2006 - Jul2008), [Retired from EAF as Major General, Jul.2008].
- EX-Chairman of Aerospace Research Center, Arab Organization for Industrialization (Jun2006 - Jul2008).
- Ex-Member of Arab Organization for Industrialization Management Board (Jul2006 - Jul2008).

Maria de Fátima F. Domingues
Research Fellow, Instituto de Telecomunicações (Institute of Telecommunications), Aveiro, Portugal.

Dr. Maria received her M.Sc. degree in Applied Physics in 2008 and in 2014 she concluded her PhD in Physics Engineering, both at the University of Aveiro, Portugal.

She is currently active in Portuguese National and European R&D projects, focusing on smart sensing and e-Health.

Her current research interests embrace the new solutions of optical fibre based sensors and its application in robotic exoskeletons and e-Health scenarios, with a focus on physical rehabilitation architectures.

The use of optical fibre sensors as e-Health enablers has presented itself as a new topic to be explored, considering the optical fibre sensors' advantages over its electronic counterparts. Dr. Domingues has authored and co-authored more than 60 journal and conference papers, and several book chapters. Moreover, she is the author of the book "Optical Fiber Sensors for IoT and Smart Devices".

Eng. Tamer Tolba
Founder and the chairman for MAS Trading Company [Middle East for Automation and Trading], Egypt

Graduated from faculty of Applied Science Electrical, Electronic and Communications Engineering Technology/Technician Alexandria University in 1991. He received his bachelor degree in Electrical communication Engineering – Alexandria University in 2014. He had been working in many Multinational Companies providing services in the field of control and automation. He is involved in the commissioning and the startup of many automation projects inside and outside Egypt. He was the general manager of Kme Shmoele big company producing Aluminum evaporators in Germany during the period 2002-2007. In 2008 he started his own company.

The company is involved in many control projects inside and outside Egypt and it has a record of Successful stories.

ABSTRACTS

4G to 5G: Future Communication and how it will enhance our life?

Speaker: Dr. Ayman Radwan

Senior Researcher and EU Project Coordinator, Instituto de Telecomunicações (Institute of Telecommunications), Aveiro, Portugal

The chapter of 4G (4th Generation) of mobile systems is finally coming to an end, with waves of 4G systems deployed over Europe and worldwide. 4G systems provide a universal platform for broadband mobile services at any time, any place and anywhere. However, the continuous increase in mobile traffic, along with the massive escalation in the number of connected devices, is constantly pushing the limits on current and future mobile networks. Additionally, the nature of applications is changing the game towards different types of requirements for future generation of mobile network. There is an almost universal agreement that incremental enhancements of current networking paradigm will not achieve or come close to meeting the requirements of networking by 2020. This has led to the need for a new generation of mobile communications: the so-called 5G. 5G is the future paradigm expected to answer the requirements of tomorrow's networks.

This talk will present the current status of 4G and the challenges imposed by the new applications being adopted (more specifically the IoT), which form the main motivation for a new networking generation: the 5G. The talk will also cover practical information about the 5G research and development, impact, challenges and its potential, emphasizing the timeline of 5G development and deployment.

The talk will conclude with showcasing different potential future applications in IoT. Different topics will be discussed, including potential in e-Health, Intelligent Transportation System (ITS), Smart city and smart housing (Home).

Cloud computing

Omar Badr

Sr. Analyst, DELL-EMC Company

The session will cover an introduction to Cloud Computing and a demo for the usage of Pivotal Cloud Services. Cloud computing is an emerging information technology paradigm that enables ubiquitous access to shared pools of configurable system resources and higher-level services that can be rapidly provisioned with minimal management effort, often over the Internet. Cloud computing boasts several attractive benefits for businesses and end users like pay per use, elasticity, self-service provisioning and measured services. Cloud computing offered deployment models like public, private or even hybrid models and different services like IaaS, PaaS, SaS to satisfy the diverse needs of different users. This session will shed a light on this emerging technology with small demonstration on of the DELL-EMC products of pivotal cloud services.

Electronics and Communication in Agriculture

Dr. Said Abdel Moniem Ahmed Mabrouk

Chief Researcher/Agriculture Research Center/Ministry of Agriculture and Land Reclamation.

Lecturer/Faculty of Engineering/Modern Sciences and Arts University

Climate change, water lack, and food shortage are three challenges that the whole world and particularly Egypt need to overcome and manage. In this context Egypt planned to implement three major projects: Upgrading the irrigation system in the old land, cultivating 1.5 million feddans of the new land and establishing thousands of modern green houses.

ESE department in collaboration with the Agriculture Research Center have succeeded to design and develop several equipment and systems to help in these ambitious projects. In this session, I will present such equipment and systems that we designed and developed. Our effort is considered a step in the journey of moving from the role of the smart precise agriculture equipment users to the designers and developers ones. These will include:

1. Automatic Agriculture Weather Stations and Egyptian Metrological Network
2. Precise Irrigation System
3. Precise Fertigation System
4. Underground Water/Wells Monitor and Control System
5. Environmental Pollution monitoring System
6. Grain Silos Management Systems
7. Red Palm Weevils and Termites Detection devices.
8. Red Palm Weevils Treatment devices.
9. Weather Upper Layers Monitor and Forecast Sstem.

Optical Fiber Sensors: Concept overview and IoT Applications

Maria de Fátima F. Domingues
Research Fellow, Instituto de Telecomunicações (Institute of Telecommunications), Aveiro, Portugal.

Since the Nobel Prize award in 2009, received by Prof. Charles K. Kao, for his research and pioneering achievements regarding the transmission of light in an optical fiber, optical fiber has been regarded as one of the top inventions of the last decades revolutionizing not only telecommunications systems, but also new fields of applications such as sensing and metrology.

Globally, Optical Fiber Sensors (OFS) Market is expected to grow at the rate of more than ~11% from 2016 to 2022, with a revenue that should reach $3.2 billion by 2022 from 2.0 Billion in 2016.

Such grow is mainly driven by the high demand of OFS in Oil & Gas and construction industries.

The rapid expansion in the use of OFS can be explained by the optimal metrological characteristics that these devices present. OFS advantages over their electronic counterparts include their accuracy, low drift, immunity to electromagnetic interference, remote operation and sensing capability, small dimensions (~125 micron), lightweight and ability to multiplex, which make them ideal for microwave, and harsh & hostile environment sensing applications as well as for bioengineering and biomedical applications.

This workshop intent to provide an introduction to the topic of optical fiber sensing. It starts with defining optical fibers in general, giving guide to how to use them in the field of communications, then moving towards the field of optical fiber sensing. The concept of sensing using optical fibers will be explored and different types of optical fiber sensing will be discussed.

In principal, different modulation/demodulation principles can be used for sensing multiple physical parameter (temperature, strain, curvature, pressure, relative humidity, refractive index, just to mention a few). According to those different principles, several techniques emerged for the productions of OFSs. In this Workshop it will be given an overview of such production techniques, and of its latest applications as IoT enablers.

Advances in Industrial Projects Based Automated Systems

Eng. Tamer Tolba
Founder and the chairman for MAS Trading Company [Middle East for Automation and Trading], Egypt

In today's competitive world, a company must be efficient ,cost effective and flexible if it wishes to survive .In Manufacturing and process industries, this has resulted in greatly increased demand for industrial control systems in order to streamline operations in terms of speed, reliability ,versatility and material throughput .

Established control media, including relay logic and computer systems can and do provide effective control of industrial processes and plants. However, each of the above control media has limitations and disadvantages that may often be overcome through the use of Programmable Logic Controller [PLC] and SCADA Systems [System Control And Data Acquisition].Our presentation will introduce the advances in the control and automation based systems through a diversity of industrial based projects serving many different field sectors like water treatment, manufacturing processes, Petroleum ,…etc

University

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