

Dr. A. Abu-Siada
Associate Professor
Department of Electrical and Computer Engineering
Curtin University, WA6102, Australia



SHORT BIOGRAPHY

A. Abu-Siada (M'07, SM'12) received his B.Sc. and M.Sc. degrees from Ain Shams University, Egypt and his PhD degree from Curtin University, Australia, all in Electrical Engineering. Currently he is an associate professor in the Department of Electrical and Computer Engineering at Curtin University. His research interests include power system stability, condition monitoring, power electronics and power quality. He is Editor-in-Chief of the international journal Electrical and Electronic Engineering, regular reviewer for various IEEE Transactions. He is vice-chair of the IEEE Computation Intelligence Society, WA Chapter.

Keynote Title : "Intelligent Techniques for Power Transformer Condition Monitoring"

Power transformer will play significant role in the future smart grid topologies. To maintain the transformer within the expected harsh operational environment, reliable and intelligent condition monitoring techniques should be adopted. While there are several existing techniques currently used by industry to monitor the condition of power transformers and diagnose any existing faults, most of these techniques are either offline and/or exhibit inconsistent interpretation process. In this presentation, novel and intelligent condition monitoring techniques will be introduced and compared with the current ones.

Professor Jian Xun JIN

School of Electrical Engineering and Automation
Tianjin University, Tianjin 300072 China
jxjin@tju.edu.cn



(Professor and Director, Center of Applied Superconductivity and Electrical Engineering, University of Electronic Science and Technology of China, 2006 Xiyuan Road, Gaoxin Western District, Chengdu, Sichuan, 611731 China. jxjin@uestc.edu.cn)

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(2005-Date) Professor and Director. Principal research covers: Applied high temperature superconductivity, superconductors in strong current and electrical power applications, electromagnetic devices, electric machines, electric cars and charging systems, energy efficiency and green energy generation, control and measurement technologies.

(1997-2004) Research Fellow, Australian ARC Large Project Chief Investigator, and Senior Research Fellow. Principal research projects included: (i) To develop applicable high temperature superconductors (HTS) and HTS coils for industrial applications; (ii) HTS magnets and applications such as high gradient magnetic separation; (iii) HTS electrical fault current limiter, HTS energy storage device, HTS transformer, and HTS power resonator for high voltage and current generation; and (iv) HTS long length wire production, auto measurement and winding systems for HTS industrialization.

(1992-1997) Postgraduate study sponsored by Australian Government, Universities, and Industrial Scholarships, Master of Science at the University of New South Wales, Doctor of Philosophy at the University of Wollongong in Australia.

In the field of the applied high temperature superconductivity, hundreds research papers have been published in the world well known journals and conferences; tens books, patents, and government research projects granted. Chairman, IEEE ASEMD conferences, (www.asemd.org), Forum of Applied Superconductivity, and Workshop of Cryogenic Techniques for Superconducting Devices. Guest Editors, IEEE Trans. Appl. Superc, JASEM, JEST. Chinese National Science and Technology Award review committee member. Referee for a large number of government research project applications. Reviewer for a large amount journals including various IEEE Trans, Physica C.

Keynote Title : "Applied Superconductivity for Future Power System and Green Environment"

High temperature superconducting (HTS) device technologies have been enabled and become available for practical HTS devices and systems developments and applications. Verification of a wide range of HTS devices, especially the HTS power devices and their system technologies, which has been conducted and is to be comprehensively introduced, and the analytical results are presented in detail towards their practical applications.

Innovative HTS technology is with great potential to incorporate present power systems related to energy conservation and emission reduction. The potential benefits of various HTS power applications and features related to energy conservation and emission reduction are explored and verified with the consideration of extensive direct and indirect benefits for energy saving and efficiency improvement in the future power systems.

A HTS SMES device, as an example, it can be utilized to form a high efficient power grid, such as a sample low-voltage rated DC power transmission network integrated with superconducting cables (SCs) and SMES devices. In addition to the SC properties of loss-less and high current transportation capacity, the effectively integrated system has a self-acting fault current limitation (FCL) feature of the SC and a buffering effect of the SMES to power fluctuations. The integrated system can achieve high-quality power transmission under common power fluctuation conditions with an advanced self-protection feature under short circuit conditions, which novel and smart system suits especially the smart grid applications. The effectively integrated system is also highlighted with a fast-response grid voltage protection feature of the SMES. The cooperative operations of the FCL SC and the SMES are favorable for achieving advanced fault current limitation, fault-ride-through capability enhancement, critical load protection during a grounding fault, and effective energy management with higher power system efficiency.

HTS industrial applications with unique characteristic and novel methodology have potential to dramatically increase power system efficiency and energy saving, and consequently reduce carbon emission with environmental friendly architectures.

Professor Dr. M. Kaykobad
Computer Science & Engineering (CSE)
Bangladesh University of Engineering and Technology (BUET)
Bangladesh



SHORT BIOGRAPHY

Dr Kaykobad, born on 1 May, 1954 at Jabra, Manikganj. He received M.S.(Hons.) in Engineering from OMEI, now Odessa State Maritime University, in 1979. In 1982 he received an M.Eng. Degree from AIT, Thailand, and Ph.D from the Flinders University of South Australia in 1988. Dr Kaykobad is a Fellow of Bangladesh Academy of Sciences(BAS), and was an Associate Secretary of its Executive Council.

Dr Kaykobad is a Professor at CSE Department, BUET since 1997, and served as its Head during 1996-1999.

He published over 40 research papers in Physical Review, International Journals of Computer Mathematics, Computers & Operations Research, Computers & Mathematics with Applications, Linear Algebra & Its Applications, Information Processing Letters, Information Processing and Management, Applied Mathematics E-Notes, Journal of Computing and Information Technology, Electronic Notes in Discrete Mathematics, Journal of International Olympiad in Informatics and Computers & Graphics. He authored, coauthored or edited 13 books. Many of these books are for inspiring young students develop either programming or mathematics skill or for developing patriotism. He is a guest co-editor of the proceedings of International Conference on Computer and Information Technology (ICCIT 2009) published by Academy Publisher.

Dr Kaykobad was the Organizing Chair of the first ever international computer conference ICCIT held in the soil of Bangladesh. He is also the Chair of the Steering Committee for Workshop on Algorithms (WALCOM) proceedings of which are published as Lecture Notes in Computer Science by Springer. He has guided more than a dozen undergraduate students whose research works were published in journals of international repute. Dr. Kaykobad participated as a Resource Person in Workshop on Science Communication sponsored by COSTED and UNESCO held at Goa during 18-23 November, 2001. He is a frequent column writer in National Dailies authoring over 300 articles, most of which are related to education of the country. He has been one of the pioneers in introducing Mathematics Olympiad, Olympiad in Informatics and Science Olympiad in Bangladesh.

He has been leading Bangladesh IOI team since 2008 from which Bangladesh received a silver medal in 2008 from Bulgaria, 2 bronze medals in 2012 from Italy and one from Australia. He was director of ICPC Asia Region Dhaka site during 2001-2003. He was the Chief Judge of IIT Kanpur Asia Region Site of ICPC in 2010, 2011 and 2013. He was adjudged as the outstanding coach of ICPC in 2002 at Honolulu, Hawaii. He was the only Senior Coach award recipient at the World Finals of ICPC held at St. Petersburg, Russia in 2013. He was also awarded a gold medal by Bangladesh Physics Olympiad.

Dr Kaykobad was a Visiting Professor at the CSE Department, the Chinese University of Hong Kong, at Kyung Hee University, Korea, ANU and Monash University, Australia and Amritapuri University, India. In year 2005 the President of the country presented him with a Gold Medal awarded by Bangladesh Computer Society for his contribution to computer programming culture in the country. In year 2006 He won BAS Gold Medal for physical sciences in the senior group which was awarded by the Prime Minister of the country. Dr Kaykobad is a member of the Executive Council of Bangla Academy.

Dr Kaykobad has been playing active role in the computerization of both public and private enterprises. He worked as a Director of Dhaka and Chittagong Stock Exchanges for many years. Currently he is an independent director of Dhaka Stock Exchange. Dr Kaykobad is a member of Academic Council and Syndicate of several universities.

Detailed bio-data can be found at www.angelfire.com/space2/m_kaykobad

Keynote Title : "Scientific Research at Early Life"

Child prodigies are young people often kids showing skills of mature experts. Examples of particularly extreme prodigies could include Wolfgang Amadeus Mozart in music, Magnus Carlsen, Paul Morphy or Gary Kasparov in chess, Carl Friedrich Gauss, Srinivasa Ramanujan, John von Neumann and Terence Tao in mathematics, Pablo Picasa and Wang Ximeng in art and Saul Kripke in philosophy. These people visited the world in different era and in all locations independent of availability of facilities around in areas they excelled early in life. In many developed countries there are arrangements of separate schooling for them. For example in Hungary there are schools for mathematical prodigies. Unfortunately, we do not hear much about our prodigies? Is it that we do not look for them as a result of which we do not find them? I believe we also have prodigies in Niaz Murshed who became the first grandmaster in South Asia, and national champion at the age of 12! Our college students Md Mahbubul Hasan, Shahriar Rouf and Khobaib Choudhury could beat all teams of all universities in university level programming contests in 2005 whence programming is not seriously taught at college level! Md Abirul Islam could earn a silver medal from IOI, Plovdiv, Bulgaria in 2009 outperforming all 8 sub-continental contestants. Dhananjay Biswas earned a silver medal from IMO and bronze from IOI in 2012 whereas Bristy Sikder was adjudged as the best female contestants of the world! Such examples will appear more frequently if we pay attention to them.

ECR Keynote Speaker

Dr. Mir. Md. Jahangir Kabir
Assistant Professor
Dept. of CSE, RUET

**SHORT BIOGRAPHY**

Mir Md Jahangir Kabir is currently an Assistant Professor of the Department of Computer Science and Engineering, Rajshahi University of Engineering and Technology, Bangladesh. He received B.Sc. in Computer Science and Engineering from Rajshahi University of Engineering and Technology, Bangladesh (2004), a M.Sc. in Information Technology from University of Stuttgart, Germany (2009) and a Ph.D. in University of Tasmania, Australia (2016). After working as a lecturer (from 2004), he is an assistant professor (from 2010) in the Dept. of Computer Science and Engineering, Rajshahi University of Engineering and Technology, Bangladesh. He received an Overseas Postgraduate Research Award from the Australian government in 2013 to research in PhD. His overseas experience includes research work in Fraunhofer Institute and University of Stuttgart, Germany, Software Developer in Parity Software GmbH, Germany, and tutor in School of Engineering and ICT, University of Tasmania, Australia. He served as a program committee member of International Conference on Neural Information Processing, Istanbul, Turkey (2015). His research interests include the theory and applications of Data Mining, Genetic Algorithm, Machine Learning and Artificial Intelligence. New Evolutionary Algorithms for Mining Interesting Association Rules.

Keynote Title : "mining frequent patterns by using evolutionary computation techniques"

Nowadays, huge amounts of data are collected and are being stored by governments, industries, and the sciences. The discovery of association rules among large amount of business transactions helps industries and governments process all the data collected and to make informed decisions. Our research involves mining frequent patterns by using evolutionary computation techniques.

In business transactions, frequent pattern mining gives an idea about the popularity of buying item sets to the users. By using it industries stock those popular products and benefit from that. Another very common real life application is shopping market basket analysis, in which retailers seek to understand the purchase behaviour of customers. The data analysis attempts to find interesting hidden relationships among products purchased by the customers through association rule mining/frequent pattern mining. For example, by using it, a shop manager may discover that butter, milk and bread are frequently purchased together by the customers. One association rule may indicate that when a customer buys coffee he would also buy milk.

Such information can then be used for purposes of cross-selling and up-selling, in addition to influencing sales promotions, store design, and discount plans. Similarly, web administrators can use frequent patterns or association rule mining to understand particular collections of web pages which are viewed together by a group of web users. This sort of interesting relationship (e.g., correlation, association) among data items helps managers make relevant policies for their industries.

In human genetics research, the aim of sequence mining is to finding the changes in DNA sequences of individuals which are responsible for increasing the risk of common diseases like cancer. This study helps to develop the methods of diagnosing and preventing these diseases. Frequent pattern mining plays a vital role in mining correlations, association and other interesting relationships among data sets. Moreover, it helps in different data mining tasks such as indexing, clustering, classification and so on. For this reason, mining frequent patterns is an important data mining task and a focused topic in the data mining research areas.

The objectives of this research are as follows: 1. Designing evolutionary algorithms for extracting frequent patterns from large data sets. 2. Designing multi-objective evolutionary algorithms for discovering a reduced set of high quality Boolean association rules from categorical data sets. 3. Improving the single seed based genetic algorithm by designing a multiple seeds based genetic algorithm for mining Boolean association rules.

There are different existing methods which find frequent patterns from large data sets but these methods still suffer because of the following problems such as efficiency, or consumption of large memory to store the results. Some methods use level wise searching which takes a long time to get the solution as well. Our hybridizing GA based approach will solve the above limitations of the existing methods. This research contributes to the real world data mining applications by analysing different data sets such as DNA sequence, Zoo, the Tic Tac Toe gaming data set, medical, business data sets and so forth.

The outcome of this research could benefit the local community in the following ways:

- 1) It could help retailers to understand the purchasing behaviour of customers. The information could then be used for cross-selling and up-selling, efficient design of stores, making discount plans, in addition to influencing sales promotions.
- 2) It could help to find changes in DNA sequences of individuals which would help to resolve the increasing risk of common diseases like cancer. Through this way it could reduce the life risk of a community or human being which could develop those common diseases.

M. Rokonuzzaman, Ph.D

Academic, Researcher and Writer: Technology, Innovation and Policy
Professor, Department of Electrical and Computer Engineering
North South University, Dhaka, Bangladesh
Blog: techpolicyviews.blogspot.com
Op-eds: opedarchive.blogspot.com



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Dr. Rokonuzzaman's work focuses on policy issues to increase wealth creation capacity of Bangladesh and other developing nations through Technology and Innovation. Through academic role, action research, advisory service, publication and policy dialogues, he has been empowering minds, promoting opportunities and raising policy issues to address the pressing development agenda: creating possibilities of profitable competition of private investment for delivering better products at lower cost, while creating high paying jobs and causing less harm to the environment. He regularly contributes to the mainstream media through op-eds to propel analysis of evidences within the context of sound theories in the policy discussion and decision--shaping national capacity to make the transition to innovation economy. He obtained M.Eng and Ph.D degrees in Electrical Engineering from Memorial University of Newfoundland, Canada.

Keynote Title : "Innovation Journey from Material to Network Externality: Evolving Policy Dynamics"

Technological development has been shaping every sphere of our life, causing disruption to Status Quo. Such development is opening new opportunities of growth, while posing significant challenges to decision making--whether to decide about policies or making investment, or pursuing education in certain disciplines. Innovation dynamics is being shaped by different forces, starting from material to network externality. Software and Network externality centric innovation is opening new window of opportunity to delegate higher level roles from human beings to machines over the network, from anywhere in the world--to get jobs done far better than ever before. But, is there any underlying pattern to interpret the past and predict the future in order to decide to act at present? Is the investment to acquire competence in Science, Technology, Engineering and Mathematics (STEM) good enough for a nation to benefit from such unfolding wealth creation opportunities? Should we redesign policies of seemingly unrelated disciplines like trade, subsidies and capital machinery import driven labor centric manufacturing to maximize dividend from investment made in STEM? Is the progression of software, artificial intelligence and network externality driven growth changing the competition rule? How should we govern such evolution so that we do not end up in human free monopoly has become a far more difficulty policymaking challenge than has been faced ever before. To create growing wealth from eroding natural resources to meet increasing consumption, it has become imperative for developing nations to focus on policy issues to enable firms to produce higher quality products at lower cost for more customers for generating attractive dividend, while creating high paying jobs, ensuring equitable growth, causing less harm to the environment and paying more taxes to the government.



**Keynote
Speakers**

Professor Dr. Saiful Islam

Vice-Chancellor

Bangladesh University of Engineering and Technology (BUET)
Bangladesh



SHORT BIOGRAPHY

Prof. Dr. Saiful Islam is the Vice-Chancellor of Bangladesh University of Engineering and Technology (BUET). Prof. Islam obtained his B.Sc Eng. in Electrical Engineering degree from BUET in 1975, M.Sc Eng. in EE in 1977 and PhD in EE from Cambridge University, UK in 1986. With an extraordinary academic background, Prof. Islam started his career as a Lecturer of EE in BUET in 1975 and became Professor of EEE department in 1988. During his illustrious service career he has earned envious reputation and professional excellence in his tenure of service spanning over 41.5 years in teaching, research and academic administration experience. An eminent educationist with exceptional caliber, Prof. Islam has been involved in a large number of National Engineering Projects and has left significant contribution in National level Engineering and Educational fields. He is well known for his innovative nature, unsurpassable quality in dynamic leadership and exceptional managerial capability. He has been involved in research in Microwave coupled line devices, Semiconductor MQW Lasers, DFB Lasers, VCSELs, OPVCSELs. He is a Fellow of Institution of Engineering & Technology (FIET) UK, Chartered Engineer (CEng) UK, Life Fellow of Institution of Bangladesh (IEB), Life Fellow of Bangladesh Computer Society (FBCS), Senior Member of IEEE SrMIEEE (USA).

Keynote Title : "The Exciting World of Photonic Devices"

Photonic devices are components for creating, manipulating or detecting light. This can include (i) Semiconductor Laser Diodes, (ii) Light-Emitting Diodes(LEDs), (v) Optical detectors, (v) Optical amplifiers, (vi) Devices for Modulating a beam of light, (vii) Devices for Combining and Separating beams of light of different wavelengths, (iv) Displays using LEDs, (iv) Displays using Lasers (iii) Solar Photovoltaic Cells. Apart from these, there can be many more complex optical devices.

These photonic devices are nowadays widely used for various applications. Of these photonic devices, different types of LEDs and Lasers have been finding wide applications. Some of these are widely used in digital communications, some are used for various types of displays, and some are used for a number of scientific and experimental purposes. Some of these are used for detection of substances. Some are used for various biomedical applications. Some are used of treatment of human organs. Some of the devices have been widely used for industrial fabrication purposes. Some are used for various types of weapons. Applications of some of these devices in the entertainment world are really exciting. In these applications, 3D images are produced without any screen which can be synchronized and modulated with sound using computers. Such blending of sound with light has become a wide source of open air entertainment of large mass gathering of people. Such systems use laser as source of light.

Solar photovoltaic cell is another exciting photonic device which has been widely used for producing electricity from sun light.

Thus, photonic devices have brought exciting changes in our day to day activities and also in our world of entertainment.

In this talk, an introduction of these devices together with some of their applications are highlighted.

Professor Wei Xu

School of Electrical and Electronic Engineering
Huazhong University of Science and Technology (HUST)
China



SHORT BIOGRAPHY

Prof. Dr Xu received the double B.E. degree from Tianjin University (TJU), China, in July 2002, and M.E. degree from TJU in March 2005, and the Ph.D. degree from Institute of Electrical Engineering, Chinese Academy of Sciences (IEECAS), in July 2008, respectively, all in electrical engineering. From 2008 to 2011, he had been one Postdoctoral Research Fellow with the School of Electrical, Mechanical and Mechatronic Systems, Faculty of Engineering and Information Technology, University of Technology, Sydney (UTS), Australia. His academic research activities in this period mainly included drive machines for linear metro and plug-in hybrid electrical vehicle (PHEV), which were financially supported by the UTS Vice Chancellor Research Fellowship (one-year), the UTS Early Career Researcher Grant, and two international research grants in China. From 2011 to 2013, Dr Xu had been appointed as one Royal Melbourne Institute of Technology (RMIT) University Vice Chancellor Research Fellow with School of Electrical and Computer Engineering in RMIT University.

Since Mar. 2013, he has been a professor at the School of Electrical and Electronic Engineering, Huazhong University of Science and Technology (HUST), China. Now he is leading one group for development on high performance of drive machines and systems based on transportation (electrical vehicle, urban railway, etc), wind generation, servo, and so on.

Dr. Xu is one Senior Member for IEEE Institute of Electrical & Electronics Engineers (IEEE) and China Power Supply Society (CPSS), since 2014. He has served as one Editor/Associate Editor for three international journals, and Regular Reviewer for more than ten IEEE/Elsevier Journals. He is very active in different kinds of academic activities supported by IEEE societies and international conferences. As one of team members, he has took part in the organization for four (times) international conferences, such as COMPUMAG 2011, IECON 2011, etc.

Till now, Dr. Xu has published about 50 IEEE Transactions papers and held 30 authorized/pending invention patents, and has edited one book titled by Advances in Solar Photovoltaic Power Plants (Springer Press). As the 1st chief investigator (CI), he has been awarded 16 projects/fellowships. He was awarded the China Youth 1000 Talent Scheme in 2015.

His research topics focus on electromagnetic design and control algorithm analysis of new structure permanent magnet synchronous machine (PMSM) drive systems for the PHEV and wind generation, and induction machine for transportation. Meanwhile, Dr Xu had be invited to serve as one Senior Consultant Engineer for new structure axial flux permanent magnet machine with Axiflux Pty Ltd, Australia from 2011 to 2012, and develop on high performance PMSM machine in Meiji University by awarding Invitation Japan Society for the Promotion of Science (JSPS) Research Fellow, Japan in 2012. Since 2015, he has been invited to serve as one consultant technique technical director for China Changjiang National Shipping Group Motor Factory.

Keynote Title : "High Performance Permanent Magnet Machines for Plug-in Electrical Vehicle"

Plug-in hybrid electric vehicle (PHEV) is mainly driven by electrical machine, while the internal combustion engine (ICE) only acts as the auxiliary energy in acceleration or hill-climbing, which could decrease the carbon dioxide emission greatly. However, the PHEV has strict requirements for the drive machine, such as high torque/power density, wide speed range, strong operation redundancy, good thermal dissipation, etc. This seminar will firstly give brief review and comparison for different kinds of machines for PHEV, and then concentrate on the development of permanent magnet machines (PMMs). According to strict requirements by some practical projects, it will discuss some important design and control issues for conventional and new structure PMMs.

ECR Keynote Speaker

Dr.-Ing. Rahamatullah Khondoker



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Since January 2013, Dr.-Ing. Rahamatullah Khondoker is working as a Researcher in Fraunhofer Institute for Secure Information Technology (Fraunhofer SIT) located in Darmstadt, Germany. He is also affiliated as a Lecturer at the department of Computer Science in TU Darmstadt, Germany. Before that, he worked as a Researcher and Lecturer at the department of Computer Science in TU Kaiserslautern, Germany. From this university, he completed Doctor of Engineering (Dr.-Ing.) in Computer Science with the topic "Description and Selection of Communication Services for Service Oriented Network Architectures". Before that, He completed M.Sc. in Computer Science degree from University of Bremen, Germany. He received several awards until now. He was selected as a top 10 researcher in 2015 by the academics.de Germany. He was awarded from Ericsson, Germany in the year 2008 and from the FIA Research Roadmap group in October 2011. On 8th July 2015, he completed "University Teaching Certificate" course from TU Darmstadt, Germany. He worked with the DFG project (PoSSuM), BMBF projects (G-Lab, G-Lab DEEP, FutureIN, IUNO - an Industrie 4.0 project), EU projects (PROMISE, EuroNF, PRUNO), and several industry projects. Currently, he is focusing on the security of Future Internet Architectures, Software-Defined Networking (SDN), Network Functions Virtualization (NFV), 5th Generation Mobile Communication systems (5G), Internet of Things (IoT), and the next industrial evolution called Industrie 4.0.

Keynote Title : "Future of the Internet –SDN, NFV, 5G, IoT, Industrie 4.0"

The 5th Generation Mobile Communication Systems (5G) Infrastructure Public-Private Partnership, in short 5G PPP which has been initiated by the European Commission (EC) and Industries, defines the aims of 5G mobile communication system which are expected to be achieved by 2020. These targets are: increasing wireless capacity 1000 times, connecting 7 billion people and 7 trillion things, saving 90% energy, and perceiving zero downtime. To achieve these goals, EU has spent over 50 Million Euro in 7th framework programme called FP7 for researching on 5G enabling technologies including Software-Defined Networking (SDN), Network Functions Virtualization (NFV), Internet of Things (IoT), and the technologies for the fourth industrial evolution in cyber-physical systems after mechanical, electrical and electronic evolutions called Industrie 4.0. These projects are: METIS, 5GNOW, iJOIN, TROPIC, Mobile Cloud Computing, COMBO, CROWD, MOTO and PHYLAWS. Recently, under the umbrella of Horizon 2020 (H2020) programme, the EC launched another four projects in 5G called Flex5GWare, Xhaul, mmMAGIC, 5GNORMA. The aim of this talk is to summarize the problems that are tackled by each of these projects and their potential Contributions in term of the aforementioned enabling Technologies