

SBASSE NEWSLETTER

JAN-MAR 2020 VOL: 13

20th **ADVISORY
BOARD
MEETING**

**IDEA
HACKATHON
2020**

TALK ON **MACHINE
LEARNING**
FROM GOOGLE X
SCIENTIST

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فام بیہ

**SBASSE PUBLIC
LECTURE SERIES**

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20TH ADVISORY BOARD MEETING OF SBASSE

Advisory board members were also presented with new LUMS policies, including new governance structure and other important reforms.

The Syed Babar Ali School of Science and Engineering (SBASSE) organised its 20th Advisory Board Meeting with the aim to analyse the progress of its strategic planning for the next ten years. Discussions on Women in Science & Engineering, research centres, and Cyber Security were also held during the meeting. The meeting began with Vice Chancellor, LUMS, Dr. Arshad Ahmad, opening the event and sharing an update on the latest developments at the University. The Vice Chancellor, highlighted the new initiatives taken, such as Centre for Continuing Education, Office of Program Enhancement and an International office to improve internationalisation. Later on, Dr. Shahid Masud, Dean SBASSE, presented the School's updates as well as a response to the last year's Advisory Board Report. The Department Chairs of SBASSE further shared the vision, status and strategy of the departments, their research and achievements of their respective faculty members and students.

Prof. Dara Entekhabi and Dr. Hassan Ahmed, led the session, 'Update on SBASSE Strategic Planning'. Later on, the Strategic Planning Committee presented the ten-years strategic plan for the Syed Babar Ali School of Science and Engineering. The Advisory Board members included Prof. James L. Wescoat JR (Chairperson Advisory Board SBASSE and MIT, USA), Prof. Sally Merrick Benson (Stanford University, USA), Prof. Muhammad Hamid Zaman (Boston University, USA), Prof. Michael Gerard Pecht (University of Maryland, USA), Dr. Hassan Masud Ahmed (CEO and Chairman, Sonus Networks, USA), Dr. Dara Entekhabi (MIT, USA), Dr. Khaled Letaief (Hong Kong University of Science and Technology, China), Dr. Sarfraz Khurshid (University of Texas, USA),



Dr. Khurram Afridi (Cornell University, USA) and Ms. Mubarik Imam (Director, Growth, Analytics, Product & Strategy (GAPS) & Integrity WhatsApp Inc.) attended the meeting this year.

The Dean SBASSE and Members of the Advisory Board welcomed the incoming Dean, Dr. Sabieh Anwar, who shared his vision and perspectives on his new role of leadership. Dr. Anwar, highlighted the challenges of the School and aimed high to achieve expected goals in coming years.

Updates on National Centre in Big Data and Cloud Computing (NCBC), Energy Institute, Centre for Water Informatics and Technology, Laboratory for Biological

and Biomedical Research and a proposal for the establishment of the Centre of Environmental Science, Engineering and Policy (CESEP) were provided to the members. Dr. Hamid Zaman led this session. New initiatives and priorities were shared along with sustainable growth plans. Later, a workshop on 'Women in Science and Engineering at LUMS' was held. It was co-chaired by Dr. Sally Benson, Dr. Sabieh Anwar, Ms. Mubarik Imam, Dr. Haniya Azam, Dr. Mobin Javed, Dr. Shaper Mirza and Dr. Wala Saadeh. A panel discussion on the possible reasons for lack of gender diversity took place. Female faculty and students shared their experiences and perspective on this matter. The Advisory Board Members also met with the

administrative and technical staff and the students at SBASSE.

The School also hosted the sixth annual Abdus Salam Memorial Lecture and invited Dr. Robert James Stoner, Deputy Director for Science and Technology at MIT, who delivered the Lecture on "The Good of Science". PhD and MS students of SBASSE presented posters of their ongoing research in the areas of Biology, Computer Science, Chemistry and Chemical Engineering, Mathematics, Electrical Engineering and Physics.

The entire event was highly productive, for both the School and the members, and the discussions helped to set a course for the coming years.



SIXTH ABDUS SALAM MEMORIAL LECTURE ON THE GOOD OF SCIENCE

The Sixth Abdus Salam Memorial Lecture was organised on the topic of 'The Good of Science', by Prof. Robert Stoner. Prof. Stoner described that prominent scientists have long played important roles in civil society, as educators, conveners, advisors, spokesmen and champions of good causes, using their knowledge and training creatively to societal benefit. But prominence is hardly a prerequisite. Many others give back in visible and less visible ways, in domains as diverse as politics, government, diplomacy, entrepreneurship, and philanthropy. In this lecture Prof. Stoner, reflected on the importance of scientists as

citizens in contemporary society, and the part universities can play in ensuring that graduates are prepared to participate in creating global prosperity and peace. The lecture was held on January 28, 2020.

Robert Stoner is the Deputy Director for Science and Technology of the MIT Energy Initiative, the founding director of the Tata Center for Technology and Design, and the co-Director of the MIT Electrical Power Systems Center. He is also a member of the MIT Energy Council, and the Science and Technology Committee of the US National Renewable Energy Laboratory. From 2007 through

2009 he served as CEO of the Clinton-Hunter Development Initiative. He received his PhD in Physics from Brown University.



SBASSE PUBLIC LECTURE SERIES: "SKIES AND BEYOND"



The Syed Babar Ali School of Science and Engineering, initiated a series of public lectures in which renowned scholars and professionals will share valuable insights and experiences on multiple topics related to science and engineering. The theme for Spring 2020 was 'SKIES and BEYOND'.

The aim of this series was to enlighten the audience with novel and less-explored areas of science and technology, and its interaction with other areas of the human experience. These lectures were open and free for the public.

The first lecture held on March 5, 2020, was on the topic of "Innovation and Cutting Edge Environmental Technologies in the Aerospace Industry in the Context of Pakistan". Dr. Sarah Qureshi was the guest speaker, who is CEO of Aero Engine Craft Pvt. Ltd.

Dr. Qureshi has developed contrail-free aero-engines for the reduction of global warming and to induce artificial rain during aircraft flight through on-board water recovery from fuel emissions; creating a vision of the future for the aviation industry whereby it can not only reduce aviation induced global warming but also adopt an approach to treat the fuel emissions as a resource.

A large number of audience were present during the session. It was very informative and inspirational to the young enthusiastic women in the audience.

SBASSE GRADUATE PROGRAMMES WEBCAST

Syed Babar Ali School of Science and Engineering, organised a Graduate Programmes Webcast 2020 to engage faculty, students and alumni from across the world, on February 28, 2020. During this online session, key information was shared on the SBASSE MS and PhD programmes offered in six disciplines: Biology, Chemistry, Computer Science, Electrical Engineering, Mathematics and Physics, which impart top-quality education with a vision to carry-out world class, multidisciplinary education and research.

The panel of experts took live questions through social media and answered all queries ranging from the programmes, tests, admissions to different mechanisms of financial support available at LUMS. Dr. Ihsan Ayyub Qazi moderated the session and the panel was broadcast online for a high-powered, two hour session to take students through the best educational experience in the region.

ACADEMIA-INDUSTRY MEETING (AIM) AT SBASSE

Chemistry and Chemical Engineering, organised an academia-industry meeting (AIM) on December 6, 2019. The objective of this meeting was to share the philosophy of our newly developed Chemical Engineering programme with professionals from different industries and provide them a platform to discuss potential collaboration opportunities. The meeting was chaired by Dr. Sohail Murad who is the Head of the Department of Chemical and Biological Engineering at Illinois Institute of Technology, Chicago, USA. Leading professionals from Fatima Group, Packages Group, BASF, AIN Engineering, Ibrahim Fibres, Nimir Industrial Chemicals, ICI Pakistan and Descon attended the event.

Syed Babar Ali, Founding Pro Chancellor LUMS, welcomed the participants and encouraged them to work closely on socially and industrially relevant problems. Dr. Shahid Masud, Dean SBASSE, provided an over-

view of the School and invited the guests to participate in the development of research projects that are at the interface of industry and academia. Dr. Basit Yameen, Chair of the Department provided an overview of the programmes currently being offered by the Department of Chemistry and Chemical Engineering. Mr. Raza Alvi, representing the Ibrahim Group, emphasised the importance of supplementing technical knowledge with soft skills such as emotional intelligence, ability to learn and positivity. Dr.

Murad shared some of his experiences in collaborating with industry and how he and his industrial collaborators benefited from it. The presentations were followed by a panel discussion between faculty members and industrial professionals during which several aspects of the Chemical Engineering programme were thoroughly debated and the areas of mutual interest between the Department faculty and the industry were identified. Finally, a road map for future activities was deliberated and finalised.



LUMS TECHNOLOGY FOR PEOPLE INITIATIVE ORGANISES IDEA HACKATHON



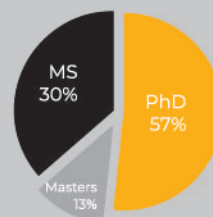
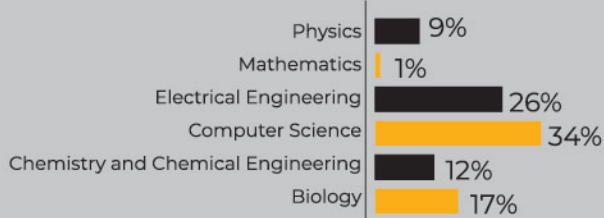
LUMS Technology for People Initiative (TPI), in collaboration with the Sub-National Governance (SNG) Programme, conducted an Idea Hackathon for the SNG Innovation Challenge and Action Research Fund. This two-day hackathon, held from February 28-29, 2020, provided a platform for representatives from Punjab Government, local technology experts, and area specialists to come together and brainstorm ideas on fiscal space, public financial management, and climate change.

The LUMS Idea Hackathon set a platform for the emergence of ideas that will help innovate some key governance areas related to public financial management, fiscal space and development, especially climate change. Hackathon participants were divided into six groups, with each group containing representatives from all key stakeholders. The participants identified prevalent problems in these areas, developed plans to remedy those problems with the help of technology, and presented their ideas to other participants including an esteemed panel of guests consisting of Shahid Hussain, Rector LUMS; Omar Mukhtar, Governance Adviser for DFID; Hamid Yaqoob, Chairman Planning and Development Department, and Wajiullah Kundi, Secretary Excise and Taxation.

The ideas generated at the Hackathon are expected to initiate an extensive call for proposals to the local tech industry, as a result of which these innovations will be piloted for proof of concept. SNG hopes to achieve a significant increase in fiscal space efficiency and better revenue mobilisation from these innovations. The effect of these improvements will directly contribute towards the availability of more resources for development in Punjab, leading to better service delivery for citizens.

SBASSE STUDENTS FOREIGN UNIVERSITY PLACEMENTS 2012 - 2019

Discipline wise distribution



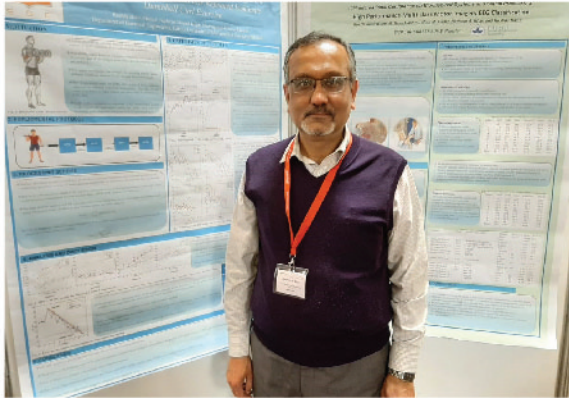
Admissions in degree programmes

Students placed in top universities of the world

TOP 1 to 100 - 46%
TOP 101 to 200 - 15%
TOP 201 to 300 - 12%

QS TOP UNIVERSITIES

ELECTRICAL ENGINEERING FACULTY PRESENTS RESEARCH AT BIOSIGNALS 2020 IN MALTA



Dr. Nadeem Ahmad Khan, Associate Professor at the Department of Electrical Engineering, presented three of his research papers at the 13th International Conference on Bio-Inspired Systems and Signal Processing, BIOSIGNALS 2020, organised by Institute for Systems and Technologies of Information, Control and Communication (INSTICC). INSTICC is a scientific, non-profit, association whose main goals are to serve the international scientific community by promoting, developing and disseminating knowledge in the areas of information systems and technologies, control and communications.

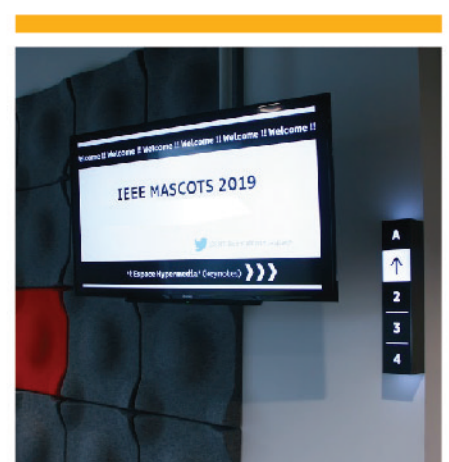
Dr. Khan also chaired a session on the theme 'Bio-inspired Systems and Signal Processing'. The conference took place in Valletta, Malta from February 24-26, 2020. Dr. Khan presented his paper on the topic of exploring the merit of collaboration in classification and compression of epilepsy EEG signal. This paper was co-authored with Rushda Basir, a Research Assistant on Dr. Khan's Faculty Initiative Fund (FIF) project. The other two papers were presented as posters which were on the topics of classification of motor-imagery in EEG signal and on local fatigue progression in bicep muscles during isokinetic exercise. These two papers were co-authored with two LUMS students, Gul Hameed, an Electrical Engineering PhD student and Muhammad Usama Rizwan, an Electrical Engineering Senior. The two papers were also co-authored by Dr. Mian M. Awais, a Professor at LUMS Computer Science Department, and another graduate student.

EE PHD STUDENT PRESENTS RESEARCH AT 27TH IEEE MASCOTS '19

Saad Zia Sheikh, a PhD student at the Department of Electrical Engineering, presented his paper at the 27th Annual IEEE International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS '19) held in Rennes, France.

Sheikh's paper is titled, 'An Improved Model for System-Level Energy Minimization on Real-Time Systems.' The

high quality of Sheikh's research can be gauged by the fact that the acceptance rate at MASCOTS '19 was approximately 30%. Sheikh is working toward his PhD under the supervision of LUMS Electrical Engineering faculty, Dr. Adeel Pasha on 'Cache-Aware Energy Efficient Scheduling for Multicore Real-Time Systems.'



CS FACULTY MEMBER AND LUMS ALUMNUS PUBLISH ARTICLE IN REPUTED INTERNATIONAL JOURNAL

CS faculty continue to distinguish themselves internationally. Dr. Adeel Pasha, Assistant Professor and Director Electronics and Embedded Systems Lab at the Syed Babar Ali School of Science and Engineering (SBASSE), has recently published an article with Mr. Afzal Ahmad, a Research Assistant at SBASSE and LUMS alumnus, in IEEE Transactions on Circuits and Systems II: Express Briefs, a highly prestigious journal.

The article, titled 'Optimising Hardware Accelerated General Matrix-Matrix Multiplication for

CNNs on FPGAs', deals with Field Programmable Gate Arrays (FPGAs). FPGAs, in contrast to Graphical Processing Units (GPUs), demonstrate massive parallelisation capabilities, at a lower energy cost than GPUs. As a result, FPGAs are being utilised to design Convolutional Neural Networks (ConvNets) accelerators for embedded applications.

In their research, Dr. Pasha and Mr. Ahmad designed an FPGA-based accelerator to improve the efficiency of convolutional layers of an efficient

ConvNet architecture. Experimental results showed significant performance improvements against the state-of-the-art FPGA-based implementations of both efficient ConvNets that are tailored towards mobile vision applications, and complex ConvNets that are used in traditional applications.

**IEEE TRANSACTIONS ON
CIRCUITS AND SYSTEMS**

II: EXPRESS BRIEFS

A PUBLICATION OF THE IEEE CIRCUITS AND SYSTEMS SOCIETY



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TALK ON NEUROSCIENCE-INSPIRED ARTIFICIAL INTELLIGENCE

Electrical Engineering faculty held a talk on 'Neuroscience-inspired artificial intelligence: Dynamic causal modelling and active inference' on January 07, 2020. Dr. Adeel Razi, Director, Computational & Systems Neuroscience Laboratory, Monash University, Australia presented the talk.

Dr. Razi's talk explored the areas of neuroscience and artificial intelligence (AI), which are burgeoning areas of research with a long history of inspiring each other, however, these interactions have been less in recent years. Advances in AI – for e.g., deep learning (DL), essentially a black-box approach, – have revolutionised many areas like computer vision, and pattern and speech recognition.

Dr. Razi received his BE degree in Electrical Engineering (with a Gold Medal) from the N.E.D. University of Engineering & Technology in Pakistan, MSc degree in Communications Engineering from the University of Technology Aachen (RWTH), Germany, and PhD degree in Electrical Engineering from the University of New South Wales, Australia in 2012.

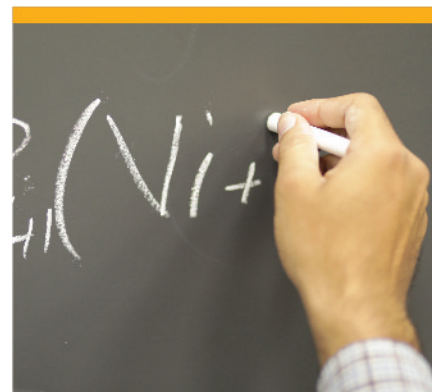
WORKSHOP ON HIGH PERFORMANCE FINITE ELEMENT SIMULATION

The Centre for Advanced Studies in Mathematics (CASM) organised a workshop on April 16, 2020, on 'High Performance Finite Element Simulation' by FEATFLOW. Since there has been an enormous increase in computational investigation of multidisciplinary problems, computational softwares dealing with such problems require a strong mathematical foundation. An immense need was required to understand and apply techniques to solve a

variety of design, analysis and optimisation challenges.

FEATFLOW is designed for various applications including, educating students, scientific research and industrial applications. This workshop series on the basics of FEATFLOW multiphysics tool is a door to the numerous opportunities for students. The workshop was attended by junior/senior students of Mathematics, Computer Science, Physics, Electric

cal Engineering, and as well as graduate students.



BIOLOGY TALK ON SENSING OF DIETARY PROTEINS AND METABOLIC REGULATION

The Faculty of Biology organised a talk on 'Sensing of dietary proteins and metabolic regulation through brain-fat body axis in *Drosophila melanogaster*'. The talk, held on February 18, 2020, was delivered by guest speaker, Dr. Muhammad Ahmed.

Abstract of the talk: Perturbation of the balanced actions of insulin and glucagon can result in a number of physiological diseases. While sugar-mediated control of insulin and glucagon is well-established, little is known about the regulation of these hormonal systems by dietary proteins. Dietary amino acids promote the secretion of *Drosophila* Insulin-Like Peptides (ILPs) from the Insulin Producing Cells (IPCs). However, the role of amino acids in controlling such metabolic regulation still remains to be determined. Using Ca^{2+} -imaging and *ex vivo* culture, we show that secretion of certain neuropeptides is directly under the control of certain amino acids which subsequently controls metabolism in the fat body of flies (a functional homolog of mammalian liver).

About the speaker: Mr. Ahmed did his Bachelors in Biology from LUMS. He is currently enrolled in the MS Biology Programme for which he went to Harvard Medical School to work as a Research Fellow in Dr. Norbert Perrimon's lab. His work is focused on interorgan communication and energy homeostasis.



WIT آب بیتی SEMINAR SERIES: WATER BALANCE CONCERN AND CURATIVE MEASURES

LUMS Centre for Water Informatics & Technology (WIT) organised 'WIT آب بیتی Seminar Series', and the first talk of the series was held on March 3, 2020, on the topic of Water Balance Concern and Curative Measures. The talk was given by guest speaker, Mr. Zamir Ahmed Soomro.

Abstract: Water resources of Pakistan comprise of both, surface and groundwater sources. More than 90 percent water sources are consumed by the Agriculture sector. However, the low crops yield associated with low water use efficiency as compared to other developed countries are bigger challenges.

Over exploitation of groundwater in big cities has caused aquifer depletion. Drinking water supply schemes are mostly dependent on groundwater. The groundwater quality is mostly unsafe for drinking due to various reasons. The disposal of untreated sewage and industrial waste in fresh water bodies threatens the quality of water. The use of uncontrolled pesticides causes a severe threat of persistent organic pollutants (POPs) and being a lower riparian area, fresh water bodies are being contaminated by across the border as well. During the talk, water quality and quantity concerns were also discussed.

About the speaker: Engr. Zamir Ahmed Soomro, is working as Regional Director at the Pakistan Council of Research in Water Resources (PCRWR), Regional Office, Lahore since the last 10 years. Mr. Soomro has served as team leader for the execution of isolated tile drainage units. He has about 30 national and international publications on irrigation and drainage, desertification/rainwater harvesting, water management, crop water requirement and water quality management to his credit.



WIT HOLDS WORKSHOP ON NATURE INSPIRED SUSTAINABLE AGRICULTURE

The Center for Water Informatics and Technology (WIT) held a two-day workshop on 'Nature Inspired Sustainable Agriculture' from January 24 – 25, 2020. This workshop was aimed towards information dissemination, engaging key stakeholders and promoting dialogue for adoption of sustainable or paradoxical agriculture practices in line with the United Nation's sustainable development goals. The first day comprised of a field visit to two farms located in Sharaqpur and Sukhehki, respectively. Participants were exposed to practical demonstrations and innovative farming techniques for effective production.

The workshop's second day consisted of presentations from keynote speakers, as well as, moderated discussions on current and future practices in Pakistani agriculture. Mr. Asif Sharif, CEO, Pedaver presented his original work on paradoxical agriculture, highlighting techniques modern farmers can adopt to increase their production.

Dr. Mahmood Ahmad, an expert trainer and agro-economist, then presented an economic analysis of Rice, which compared the profitability of conventional and sustainable cultivation practices.

The workshop was attended by Syed Babar Ali, Founding Pro Chancellor LUMS and private and public sector representatives, among who were Dr. Salman Shah, Advisor to the Chief Minister of Punjab, Mr. Abid Bodla, Infrastructure Development, Government of Punjab, and Dr. James Wescoat, Member of the WIT Advisory Board and Professor at MIT USA.

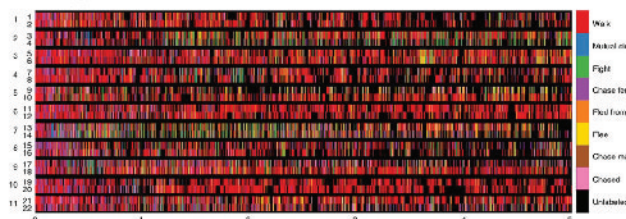


TALK ON DEEP LEARNING BY SCIENTIST FROM GOOGLE X

Faculty of Electrical Engineering held a talk on 'Exploring the computational principles of brain-wide development through deep learning' on January 2, 2020. Dr. Asim Iqbal, Machine Learning Scientist at Google X, presented the talk.

Mapping the structure of the mammalian brain at cellular resolution is a challenging task and one that requires capturing key anatomical features at the appropriate level of analysis. Although neuroscientific methods have managed to provide significant insights at the micro and macro level, in order to obtain a whole-brain analysis at a cellular resolution requires a meso-scopic approach.

As a Machine Learning Researcher at Google X, Dr. Iqbal works on the intersection of deep learning and computational neuroscience. He recently finished his PhD studies in Computational Neuroscience at UZH/ETH Zurich. During his graduate studies, Dr. Iqbal worked as a researcher in the field of machine intelligence at MIT, IBM Research, Allen Institute, UZH and ETH Zurich. His research work has been featured in *Nature Machine Intelligence*, *Nature Methods* and *Nature Science Reports*.



**nature
neuroscience**

CONFERENCE ON MOLECULAR DYNAMICS IN SOFT MATTER AND BIOLOGICAL PHYSICS

A conference on Molecular Dynamics in Soft Matter and Biological Physics, held from February 13-14, 2020, was organised by the SBASSE faculty. It drew together speakers and researchers in computational physics and computational biology. The focus of the conversation was identification and development of expertise in molecular simulations that harnessed to promote innovative solutions in the areas of material science, nanotechnology and biotechnology and pharmacology. Research in both Pakistan and abroad has leveraged multidisciplinary approach

to address basic and applied issues in this area. The event was held in collaboration with the Higher Education Commission Pakistan.

Invited speakers at the conference included, Dr. Zaheer Qasmi, The Impact of Molecular Dynamics on Drug Design; Dr. Fakhr-ul-Inam, Ab Initio Molecular Dynamics; Dr. Ishrat Jabeen, Current trends and future challenges in computational life sciences and Dr. Qaiser Fatimi, Molecular Dynamics Simulation: Application and Scope.

The keynote speaker of the conference was Dr. Shahid Masihuddin Khan. Dr. Khan is a Senior Scientist at the Molecular Biology Consortium, Lawrence Berkeley National Laboratory, USA. He has received his PhD in Molecular Biophysics from Yale University; followed by postdoctoral training at Caltech. He was on the faculty at the Albert Einstein College of Medicine, USA, leaving as Professor of Physiology and Biophysics. As a senior Professor and the first Head of Biology (2008-2010) he was one of the founding faculty of Syed Babar Ali School of Science and Engineering. Dr. Khan has been an established NIH investigator for over two decades and has served on several USA NIH, NSF and Pakistan HEC review panels. He has over 50 publications and several reviews and book chapters in leading international journals. He has applied and published on Molecular Dynamics since 2014.

SEMINAR ON NEW ADVANCES IN DIRECT NUMERICAL SIMULATION OF MULTIPHASE FLOW

Faculty of Electrical Engineering held a workshop on January 3, 2020. Dr. Amir Riaz, Associate Professor, University of Maryland, gave the talk on 'New Advances in Direct Numerical Simulation of Multiphase Flow', as a guest speaker.

Abstract: Multi-phase flow of immiscible fluids impacts climate and society. It occurs over a wide range of physical phenomenon in both natural processes as well as industrial applications ranging from biological and microscopic scales to planetary and astrophysical scales. Modelling and

prediction of multi-phase flow focuses on the analysis of fluid-fluid, solid-fluid and gas-liquid interactions involving thermophysical phase transitions at critical points across phase boundaries.

About the speaker: Dr. Amir Riaz is an Associate Professor of Mechanical Engineering and Applied Mathematics at the University of Maryland, College Park. He received his PhD in Computational Sciences from the University of California at Santa Barbara and worked as a postdoctoral Research Associate at Stanford University.



CHEMISTRY & CHEMICAL ENGINEERING STUDENTS VISIT NESTLÉ PAKISTAN

Industrial visits serve as an important academic activity for students and contribute to the achievement of essential learning outcomes. Keeping in view their essential role, the Department of Chemistry and Chemical Engineering arranged an industrial visit to Nestlé Pakistan in Sheikhpura. Second-year Chemical Engineering students, accompanied by faculty, Dr. Muhammad Shoab and Dr. Ali Rauf, were briefed about the industrial work flow, supply chain management, quality control, and safety.

Nestlé Pakistan Ltd., a subsidiary of Nestlé S. A., Switzerland is among the largest suppliers of consumer goods across the world. Nestlé Pakistan is serving Pakistani consumers since 1988 and now also associates itself with approximately 170,000 farmers in collecting milk and engages in a number of rural development programmes. During the visit to the Sheikhpura dairy, juice and water factory, Engineer Anam Asif from Nestlé Pakistan explained dairy collection,

processing, juice and water units. The students also got a chance to learn about the role of Chemical Engineers in food processing industries.



IN CONVERSATION WITH THE NEW DEAN OF SBASSE, DR. MUHAMMAD SABIEH ANWAR

By Haneen Rafi
Deputy Manager Communications

Since its inception, the Syed Babar Ali School of Science and Engineering has been a hub for groundbreaking research by gifted individuals trying to make a difference, creating small supernova explosions in their respective fields.

Dr. Muhammad Sabieh Anwar is one such inspired academic who is working to train the next generation of leaders of scientists and researchers in Pakistan and leave a lasting impact. Dr. Anwar has been appointed the new Dean of the Syed Babar Ali School of Science and Engineering (SBASSE). His tenure is being supported by the Ahmad Dawood Chair, established in 2003 by The Dawood Foundation.

Dr. Anwar's academic and professional journey is an interesting amalgamation of surprises. He pursued an undergraduate degree in Electrical Engineering, and decided to change gears. As a Rhodes Scholar, he did his PhD in Physics from Oxford University, and his postdoctoral research at the Department of Chemistry at the University of California, Berkeley, working on magnetic resonance spin physics and hyperpolarised nuclear magnetic resonance. Pakistan beckoned and he returned home to join LUMS in 2007 and helped establish the Department of Physics at SBASSE.

A little over a decade later, announced as the Dean of SBASSE, Dr. Anwar is more comfortable talking about the world of condensed matter and spin physics and quantum computers, than answer a question about how he



The role of a Dean here is crucial, he adds.

“The Dean must be a leader and lubricate these connective pathways so that faculty feel more liberated to talk to their colleagues and have a very strong and effective communication mechanism. I would like to build a strong science communication wing where we could develop fascinating stories of the brilliant work that our faculty does.”

has achieved so much in such a short period of time. He fondly talks about some of his recent research work he has done at LUMS while working with undergraduate students. "One area that excites me is of quantum computing, which was also the subject of my PhD. In the past two years ago, there have been reports of breaking the quantum ascendancy limit, which means building a large enough quantum computer that could do something which other classical computers can't possibly achieve, even within the lifetime of the universe. At LUMS we've built some basic tabletop quantum computing experiments with photons, with the idea of exposing this fascinating field to our students."

Regardless of the topic of discussion, he reveals a wealth of information and shares a dynamic vision for SBASSE in which faculty and students will play a crucially interdependent role towards the School and the University's advancement.

Dr. Anwar credits his academic and professional journey as an example of the symbiotic relationships in science. This, he believes, has resonance at SBASSE too, and is an extension of the learning without borders agenda at LUMS which adopts an integrated core curriculum across disciplines. Dr. Anwar elaborates, "The no-borders approach is central to the School of Science and Engineering. The teaching we do is very interdependent and is designed to highlight and amplify the interconnectedness of science. We have and will continue to expound on this interdisciplinary approach in our classrooms. What I would like to see in the near future is a physicist teaching a chemistry lecture, a biologist going into physics class and introducing biology from a physical perspective."

To achieve this, he adds, the faculty needs to be facilitated in the learning and teaching process. "We need to encourage what they are already doing, see if they have some stumbling blocks in their way and empower them. This can be done by recognising their diversity, their precise and unique strengths. Every individual that is a part of the team at SBASSE has a particular strength and caters to a particular niche. We would like to first recognise what the niche is and help them grow in their respective directions."

However, this vision, he explains, is not just restricted to SBASSE. It is also essential to make connections across faculty, in particular with faculty from other schools.

For Dr. Anwar, the faculty at SBASSE and the work they are doing is driven by the sense of duty to the country and love for science. These are individuals, he explains, who are passionate about SBASSE, about LUMS and more importantly about science and knowledge inside Pakistan. The country, he explains, can greatly benefit from this treasure trove of extremely talented and brilliant individuals. "We wish to shape the future of the country by training people who are better than us."

To train a driven and ambitious crop of scientists and researchers, Dr. Anwar shared the idea of 'synaptic hires', which will help create a truly interdisciplinary faculty who may not belong primarily to one department, but are at the crossroads of different disciplines so they can spiral new movements of scientific inquiry inside SBASSE. And such a dynamic approach to education in Pakistan, he reiterates, could only have been possible at LUMS. "Here I have academic freedom, as LUMS respects diversity and is the best springboard to spread the light of science in Pakistan."

This academic freedom, however, is not enjoyed by many in Pakistan which is why the state of education is lamentable. Having helped design the curriculum at LUMS as well as of the undergraduate national curriculum in physics, Dr. Anwar has closely worked with the public education sector. He believes, barring a few exceptions, the country is not making much progress on bringing science-based teaching out of the closet of traditionalism and making it more critical inquiry based.

He elaborated that our education system has ossified as teachers lack passion for teach-

"One major obstacle that scientists and in particular educators in Pakistan face is that they are prisoners of a process. This process is bureaucratic and undermines and discourages most of the scientific and creative work necessary for a more modern approach to science education."

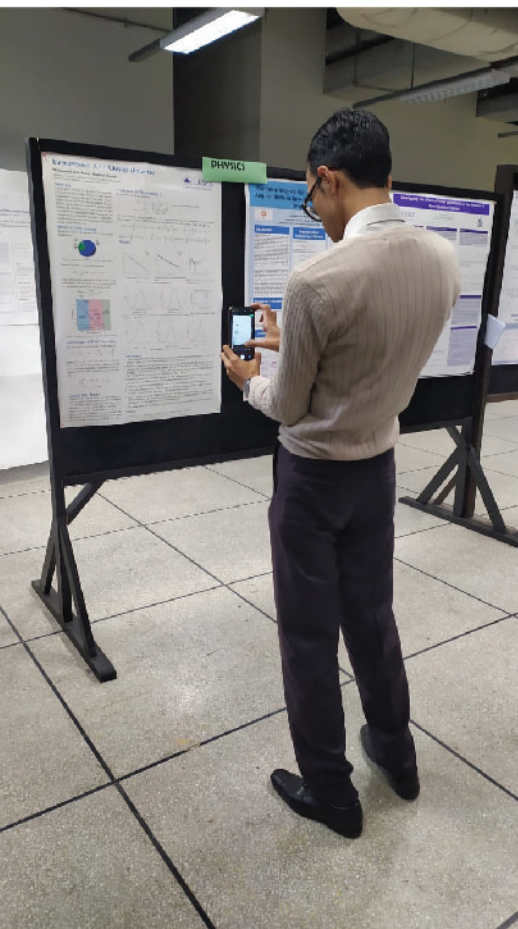
ing and unless the teaching of science is not done by those who have fire in their bellies and adopt new pedagogical techniques that make science fun, not much will change.

This model is certainly not a theoretical concept for Dr. Anwar. At the Department of Physics at LUMS, a similar approach has been adopted and an entire ecosystem of creation and design has flourished. From homegrown instruments and equipment, indige-

nous ideas and a whole lot of passion for the subject, he has helped set-up the PhysLab at LUMS, a model adopted in multiple universities in Pakistan. At LUMS, a large cohort of students is being trained in this laboratory where they work closely with faculty members in developing new experiments which have been published in top notch journals. For Dr. Anwar, this is an attempt to change the face of how experimental science is taught and learnt in this country.

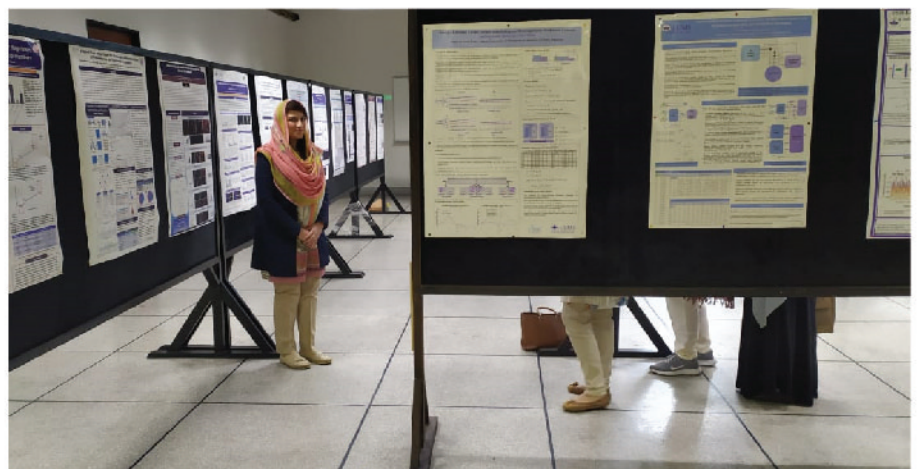
He advises students to take advantage of such a dynamic research environment. "Students at LUMS have the luxury of experimenting. They must experiment inside laboratories as well as by extensive reading, by going deeper into the burrows of certain features of knowledge outside the classroom. Don't make your grades your final goal."

SBASSE POSTER PRESENTATION SESSION 2020



A Poster Presentation Session was arranged on 29 January 2020, in SBASSE where graduate students of MS and PhD programmes at SBASSE were invited to present their exciting research. The event was widely attended by the LUMS Vice Chancellor, Provost, members of the SBASSE Advisory Board and the Management Committee as well as SBASSE faculty, staff and students.

Around 95 MS and PhD students presented their posters for the presentation. The session provided a great opportunity for the graduate students to discuss their research with the prominent academicians and corporate leaders from around the world, and gain valuable feedback. The session continued for an hour and a half and concluded with tea.



FACULTY NEWS:

FAREWELL:

A farewell ceremony was held on Feb 5, 2020 in Dean's Smart Room to honour Dr. Shahid Masud for his services as third Dean of Syed Babar Ali School of Science & Engineering. Entire school faculty and Dean's office staff members attended the event and admired exiting Dean for his tireless academic & administrative services for the school. Dr. Shahid Masud was presented with a souvenir shield by the faculty and staff members.

While expressing his thoughts, Dr. Masud said, "I tried my best to take along all the fellow colleagues, listened to their problems carefully and tried to solve their issues on utmost priority." He warmly thanked all of his fellow colleagues who have worked with him over the years and shared many accomplishments during his tenure.



NEW APPOINTMENT:



Dr. Sabieh Anwar has been appointed as the Dean of School of Science and Engineering for a three-year term beginning from February 3, 2020.



Dr. Falak Sher has been appointed as the Department Chair of Chemistry and Chemical Engineering for a three-year term beginning January 1, 2020.

WELCOME ON BOARD:



Dr. Agha Ali Raza has joined as Assistant Professor in the Department of Computer Science.

PROMOTION & TENURE:



Dr. Rahman Shah Zaib Saleem has been promoted to tenured Associate Professor in the Department of Chemistry and Chemical Engineering.



Dr. Basit Yameen has been granted tenure in the Department of Chemistry and Chemical Engineering.

PHD THESIS DEFENCE:

We are glad to share the news of a successful PhD defense of the following students and wish them all the best in their future endeavors.

• **Maryam Abdul Ghafoor**, PhD in Computer Science
Title: 'Automated Testing of Database Driven Applications.'

• **Affan Rauf**, PhD in Computer Science
Title: 'Incremental Techniques in Automated Test Case Generation.'

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