Newsletter

PAF-IAST
Skilling Pakistan

SPCAI

Sino-Pak Center for Artificial Intelligence
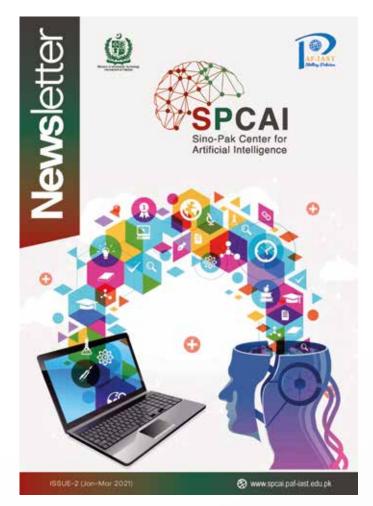
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Welcome to the third edition of the SPCAI quarterly newsletter!

In this edition, you will know about different events and activities organized by SPCAI. We have had a great response to our first & second edition and want to thank all of you who have taken time to write or talk to us about it. We really appreciate your opinion about SPCAI, so please get in touch if you have comments on any aspect of our labs or service. **info@spcai.paf-iast.edu.pk**

1st Newsletter
Oct-Dec, 2020

2nd Newsletter
Jan-Mar, 2021

For more Information visit Our Website

https://spcai.paf-iast.edu.pk/

SPCAI Industrial Day: How Artificial Intelligence is Revolutionizing the Pakistani Industry

The SPCAI, under the aegis of PAF–IAST, organized an industrial day with the title 'How Artificial Intelligence is Revolutionizing the Pakistani Industry: Challenges and Opportunities' on 5 April 2021. The purpose of the seminar was to gather AI leaders in Pakistan under one roof to help understand how AI is revolutionizing the Pakistani industry and how modern AI trends can be introduced to the local market. About 15 AI-based companies participated in the seminar and the participants from these companies gave presentations covering the theme of the event. Addressing the audience, Dr. Mohammad Mujahid, Rector PAF–IST, guaranteed complete academic support from SPCAI to the local industry to promote research and development in Pakistan's AI sector. An official from the Ministry of Information Technology and Telecommunication (MoITT) also joined the seminar.

MOU Signing Ceremony between SPCAI and Advanced Telecom Services

SPCAI and Advanced Telecom Services (ATS) join hands to promote Artificial Intelligence (AI) and AI-enabled services in Pakistan. The MOU signing ceremony was held on April 15, 2021, at SPCAI, Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology, Mang, Haripur. ATS is a technology consulting company established in 2011 in WA USA that offers Professional Engineering services in Telecommunication, IT, and Artificial Intelligence. ATS is a Subject Matter Expert in Digital Wireless, Cloud, and Artificial Intelligence. The major objectives of this MoU are:

- To provide technical assistance and resources to assist in collaborative research & development, training, and skills development.

- To promote research & development of AI and AI-enabled services arising in Pakistan, particularly in different domains of AI

- To facilitate mutual sharing of resources like labs, training, and internships, etc. with a focus on AI.

- To jointly publish research in papers, journals, blogs and potentially file patents

- To jointly develop project proposals for securing funding from national and international organizations.

- To expand the cooperation to assist other public sector organizations to promote research and development in AI and ML.

SPCAI Team Visited National Centre for Physics

A delegation of the SPCAI visited National Centre for Physics (NCP) Islamabad on 20 May 2021. The purpose of this visit was to explore various areas of mutual interest in the field of Artificial Intelligence (AI) to create opportunities for collaboration. SPCAI and NCP agreed to collaborate on:

- AI applied to research topics in Physics
- Expertise sharing in High-Performance Computing
- Activity detection from video data
- AI in Medical Imaging and Biomedical Applications
- The team also visited different labs managed by the NCP.

An MoU between SPCAI and NCP has been prepared and will be signed expectedly in August 2021.

Launching Ceremony of NAIF

A delegation of the Federal Education Reporters Association comprising reporters from leading newspapers and electronic media channels visited SPCAI on 29 May 2021. On this occasion, National Artificial Intelligence Forum 2021 was officially launched which is scheduled to be held by the Sino-Pak Centre for Artificial Intelligence PAF-IAST on 2nd September 2021, in collaboration with the Federal Ministry of Information Technology & Communication. The delegation was briefed about the various programs of PAF-IAST and SPCAI. The delegation visited labs, a data center, and other facilities. They appreciated the state-of-the-art facilities and extended gratitude for the nice hospitality.

National Artificial Intelligence Forum (NAIF)

LAB2Market Event

Lab2Market

Sino-Pak Center for Artificial Intelligence (SPCAI) is a center of excellence at Pak-Austria Fachhochschule: Institute of Applied Sciences & Technology (PAF-IAST), Haripur aiming to build national capacity to carry out research and development in the emerging field of AI.

SPCAI is organizing a **"Lab2Market"** event as a part of the National Artificial Intelligence Forum (NAIF) on **2nd September, 2021**. The main objective of this event is to invite students from Pakistani universities to showcase their AI-based applied research ideas in the form of projects, prototypes, or artifacts at the NAIF.

Eligibility Criteria:

Students from Pakistani universities, currently enrolled in any degree program or have completed their degrees in the last three years, are eligible to register for this event.

How to Register?

- **Registration Link:** www.bit.ly/lab2marketevent
- **Registration Deadline: 31st July, 2021**
- For more details visit: www.nationalaiforum.com.pk

Scan Code to Register

Lab2Market event consists of 3 phases.

- **Phase -I (Acceptance Notification):** The registered projects will first undergo initial screening and be notified about their acceptance by **4th August, 2021.**
- **Phase-II (Three-Minute Pitch):** The accepted projects after Phase-I will be invited to deliver a three-minute pitch (3MP) on **19th August, 2021.**
- **Phase-III (Project Exhibition):** The projects shortlisted after 3MP will qualify for the project exhibition at the NAIF on **2nd September, 2021.**

Awards:

- The top 3 projects, evaluated by the judges, will be awarded the cash prizes.
- The top-rated projects will also get an opportunity to apply for the **PAF-IAST Venture Capital Fund* up to 100,000 USD.** (*Terms and conditions apply)

Call: 0315 5199311 | Email: info@spcai.paf-iast.edu.pk
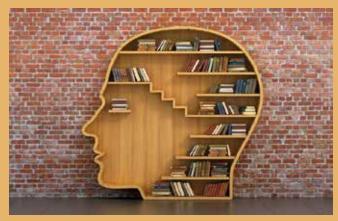For registration please visit www.nationalaiforum.com.pk www.spcai.paf-iast.edu.pk

Research Publications

- Dr. Fiza Murtaza's research paper entitled "T-VLAD: Temporal Vector of Locally Aggregated Descriptor for Multiview Human Action Recognition" has been accepted on 27 April 2021 for publication in Special Issue on "Advances in Human Action, Activity and Gesture Recognition (AHAAGR)", Pattern Recognition Letters, Elsevier.

- The research paper of Dr. Ehatisham-ul-Haq with the title "A decentralized hybrid computing consumer authentication framework for a reliable drone delivery as a service" has been accepted and published in PLOS ONE journal on 30 April 2021.

- The research paper of Dr. Arshad Iqbal has been accepted in May 2020 to be published in IEEE Internet of Things journal under the title "Spatio-Temporal Medium Access Control for Wireless Powered IoT Networks".

Acceptance of SPCAI Research Grant Proposals

SPCAI initiated the first Call for Research Proposal in February 2021. The SPCAI research grant phase 1 (SPCAI-RG-1) is one of the key components of financial assistance from MoITT in establishing the center. It aims to foster academic and industrial collaborations in the development of research competencies at SPCAI and to propose solutions that support industrial development.

SPCAI-RG-1 attracted many national research centers and institutes to participate in this call on different AI-related problems. Seventeen proposals were submitted in this call by the SPCAI faculty as Principal Investigator in which other research centers and institutes participated as academic collaborators. 17 different industries also participated as industrial partners. Out of these 17 proposals, 8 proposals were accepted after undergoing an extensive review process from the panel of external experts with an approved grading scheme. The final scrutiny led to the selection of the top 7 proposals after undergoing the 3-minute pitch competition. These 7 projects were then further scrutinized by the competent authority based upon their industrial readiness level, commercialization, and product aspects based on which following 5 projects were finally selected under SPCAI-RG-1:

- **AI-SOLARCAST:** A step towards mitigation of energy poverty by utilizing artificial intelligence for sustainable supply of solar energy by Dr. Sohail Khan

- **INTERACT:** Intelligent forecasting and control of energy storage for smart buildings by Dr. Sohail Khan

- **IntelliSurv:** An Intelligent Surveillance System for Detection of Anomalies in Real-time Videos by Dr. Fiza Murtaza

- **Sight for blind spot:** A smart rehabilitation training protocol for individuals with Retinal Degenerative Diseases by Dr. Hafsah

- **GESTAR:** Using mm-wave Radar and Ai for Development of New Gesture Language by Dr. Zaffar Haidar Janjua

SPCAI Webinars

SPCAI has started a series of webinars to share and discuss the latest research works being conducted in key domains relevant to AI and its applications, including (but not limited to) Computer Vision, Deep Learning, Intelligent Systems, Smart City and Urban Planning, Smart Agriculture, Intelligent Biomedical Applications, and Neurocomputing. This webinar is open for the public and the interested candidates may register freely to attend and participate in the live session.

In this regard, the following webinars have been conducted by SPCAI faculty members:

- **Use of AI for Low Vision Rehabilitation** by Dr. Hafsah Ahmad (Postdoctoral Researcher at SPCAI), May 06, 2021

- **Application of AI in Pathology Detection** by Dr. Jawad Hussain (Postdoctoral Researcher at SCPAI), 3rd June 2021

- **Text Classification using Deep Learning Techniques** by Dr. M. Ilyas Azeem (Assistant Professor at SCPAI), 17th June 2021

- **Artificial Intelligence of Things: When Artificial Intelligence Meets The Internet of Things** by Dr. Arshad Iqbal (Assistant Professor at SPCAI, 29th July 2021

The recordings and presentation slides of these webinars are available at:
https://spcai.paf-iast.edu.pk/webinar-sessions/

Faculty at SPCAI
Managing Director

Dr. Atif Mashkoor
Foreign Faculty / Managing Director

Dr. Mashkoor is the founding MD at SPCAI, a Foreign Faculty at PAF-IAST, and a Senior Research Scientist at JKU Linz, Austria. He is also an Adjunct Faculty at ICCBS - one of the premier research establishments in the developing world and a UNESCO center of excellence. He has extensively worked on European-level application-oriented research and development projects in Austria, France, and Portugal. He was the Scientific Head at SCCH, the Austrian center of excellence in data and software science, from 2012 – 2017. He holds Ph.D. from France, and M.S. from Sweden in Computer Science. Additionally, He has also studied Computational Linguistics in Spain.

Research Area:	
AI-Inspired Software Engineering	Logical Foundations of Cyber-Physical Systems
Functional Safety & Cybersecurity	Logics, Formalisms & Rigorous Methods
IoT	Model-Driven Engineering & Architecture

Senior Faculty

Dr. Khan holds a Doctoral degree with distinction in the field of Electric Power Systems from Technical University of Vienna, Austria, obtained in 2016. He has been presently working as senior faculty at SPCAI at PAF-IAST, since October 2020. Before that he worked as Scientist from 2016 to 2020 in the leading applied research institute of Austria called Austrian Institute of Technology (AIT). There, he worked in the co-funded European and customer-oriented projects in the areas of renewable energy integration in medium and low voltage (MV, LV) distribution systems, frequency stability analysis of transmission systems, virtual inertia support from bulk energy storage systems and integrated energy systems (combining the district heating networks with power distribution networks). He is actively working on using AI for energy forecasting, machine learning for dealing with the uncertainty in energy systems and cross cutting applications using AI for decision support in urban planning, agriculture, transport, and security related areas. He is promoting AI for clean, affordable and reliable energy supply at the center of excellence.

Dr. Sohail Khan
Senior Faculty / Assistant Professor

Research Area:	
Active distribution networks	Energy management systems
Artificial intelligence	Power system design and control

Dr. Zaffar graduated from COMSATS University as Computer Engineer in 2005. He completed his MS in information and Intelligent systems from the University of Liverpool, UK in 2007 and PhD in Artificial intelligence from the University of Milan in 2016. He worked as a researcher and data scientist in different European research centers and has more than 7 years of working experience in artificial intelligence–related projects.

Dr. Zafar Haider
Senior Faculty / Associate Professor

Research Interest:

Anomaly detection	Audio data analysis	Computer vision
Deep learning	Edge computing	Internet of Things
Knowledge engineering	Machine learning	Semantic reasoning
Smart health		

Support Faculty / Assistant Professor

Arshad Iqbal received the Ph.D. degree in electrical and computer engineering at Sungkyunkwan University, Suwon, Korea in Aug 2020 and the B.S. degree in electrical computer engineering from COMSATS (CIIT), Abbottabad, Pakistan in 2013. His research interests include wireless LANs, energy–harvesting networks, backscatter communication networks, Internet of Things, sensor networks, and resource allocation, Artificial Intelligence / Machine Learning / Reinforcement Learning, and medium access control of wireless communication networks and next–generation communication networks.

Dr. Arshad Iqbal
Support Faculty / Assistant Professor

Research Interest:

Artificial Intelligence/Machine Learning/Reinforcement Learning	Next–Generation Communication Networks	Power Saving
Resource Allocation	Sensors Networks	

Dr. M. Ehatisham-ul-Haq
Support Faculty / Assistant Professor

Muhammad Ehatisham-ul-Haq received his BS degree in Computer Engineering from the University of Engineering and Technology (UET), Taxila, Pakistan, in 2014 and won Gold Medal. He acquired his MS and Ph.D. degrees in Computer Engineering as well from UET Taxila in 2017 and 2021, respectively, where he was awarded a fully-funded scholarship from the university. He won Chancellor's Gold Medal on completion of his MS degree (with specialization in Signal and Image Processing) and also got distinction in the Ph.D. degree (with specialization in Ubiquitous Computing). He is currently working as a Support Faculty/Assistant Professor at Sino-Pak Center for Artificial Intelligence (SPCAI), Pakistan-Austria Fachhochschule: Institute of Applied Sciences and Technology (PAF: IAST) since January 2021.

Research Area:		
Artificial intelligence	Biomedical signal processing	Internet of Things
Machine learning	Ubiquitous Computing	Information Security

Dr. Murtaza is currently serving as Support Faculty/Assistant Professor at SPCAI, PAF-IAST since August 2020. Before that she worked as Assistant Professor and Head of Computer Science Department at Women University Swabi from December 2019 to August 2020. She completed her PhD. in Computer Engineering with specialization in Computer Vision from UET, Taxila, Pakistan in October 2019. Her PhD research title is "Temporal human action detection in long and untrimmed videos". During her PhD studies she also worked as visiting research scholar at Multimedia & Vision Research Group, School of Electronic Engineering and Computer Science, Queen Mary University of London, United Kingdom and Cortexica Vision Systems Ltd., London, United Kingdom from March 2019 to August 2019. At SPCAI, she is currently working on the detection of suspicious/targeted human actions inside campus environment which will be further extended to other environments including banks, hospitals etc.

Dr. Fiza Murtaza
Support Faculty / Assistant Professor

Research Area:	
Artificial intelligence	Machine learning
Computer vision	Signal and Image Processing

I am a passionate Software Engineer & Data Scientist with 4 years of research experience in Intelligent software engineering. Especially focused on recommendation system for pull requests in the GitHub platform. With our novel approach, we got better performance than the existing models. Experienced in extracting GitHub data, building prediction models using machine learning and deep learning techniques. Looking to use my Ph.D. in Software Engineering to build artificially intelligent tools using machine learning & deep learning techniques at your organization.

Dr. M. Ilyas Azeem
Support Faculty / Assistant Professor

Research Area:		
Mining Software Repositories using machine learning and deep learning techniques	Natural language processing	Recommendation Systems
Software Refactoring and Code smell detection	Systematic literature reviews	

Post Doc. Researcher

Dr. Hafsah Ahmad is currently serving as Postdoc Researcher/ Principal Engineer at Sino-Pakistan Center for Artificial Intelligence (SPCAI), Pak-Austria Fachhochschule: Institute of Applied Sciences and Technology (PAF-IAST) since January 2021. Before that, she served as Research Collaborator at the Unit for Visually Impaired People (UVIP), Italian Institute of Technology (IIT), Genoa, Italy from November 2019 till May 2020. Dr. Hafsah Ahmad completed her Ph.D. in Bioengineering and Robotics (Cognitive Robotics, Interaction and Rehabilitation Technologies) in joint collaboration with the University of Genoa, Genoa, Italy and Italian Institute of Technology, Genoa, Italy in April 2020. Her thesis title was THE SOUND OF SCOTOMA: A MULTISENSORY INTEGRATION APPROACH FOR INDIVIDUALS WITH MACULAR DEGENERATION. Currently, at SPCAI, she is working on the establishment of the Human Computer Interaction Laboratory.

Dr. Hafsah Ahmad
Post Doc. Researcher
Sino-Pak Center for Artificial Intelligence

Research Area:		
Brain Computer Interaction	Low-vision rehabilitation	Multisensory integration
Neural Engineering		

Dr. Jawad Hussain
Post Doc. Researcher
Sino-Pak Center for Artificial Intelligence

Dr. Jawad received PhD degree from Universiti Teknikal Malaysia Melaka (UTeM) Malaysia with a specialization in Biomedical Engineering. His PhD research was related to the analysis of peripheral muscle fatigue in triceps brachii using surface electromyography. He got M.Sc degree in Electrical Engineering from the University of Engineering and Technology (UET) Lahore and BSc Electrical Engineering from COMSATS University, Lahore Campus, Pakistan. With over 4 years of teaching and 3 years of industrial experience, he has the passion to explore new horizons of research in his field. His current research interests include biomedical engineering and biological signal processing, fatigue analysis, and the use of AI for pathology detection.

Research Area:

Biomedical signal processing	Biostatistics	Mechanomyography
Muscle fatigue	Surface electromyography	

Dr. Ali holds a Doctoral degree with distinction in distributed systems from Gyeongsang National University, Jinju, South Korea, in the year 2020. He is holding bachelor and master's degrees from NWFP agricultural University Peshawar and Institute of Management Sciences, Hayatabad Peshawar, respectively. At the present, he has been working as Postdoc Researcher at SPCAI at PAF–IAST since August 2020.

Dr. Ihtisham Ali
Post Doc. Researcher

Research Area:

Fuzzy logic and distributed systems.	Smart cities, and Smart health applications development.
Machine learning algorithms.	

Industrial Partners

- Advanced Telecom Services (ATS), WA, USA
- Solartech
- IKS Services Pvt Limited
- Renzym (Pvt.) Ltd
- N-ovative Health Technologies (NHT) Pvt Ltd
- National Engineering & Scientific Commission (NESCOM), Islamabad

Academic Partners

- University of Engineering and Technology Taxila, Pakistan
- Al-Khawarizmi Institute of Computer Science, UET Lahore
- RIMMS, National University of Sciences and Technology (NUST), NUST
- SMME, National University of Sciences and Technology (NUST), NUST
- National Center for Physics, Pakistan

International Partners

The Johannes Kepler University Linz (German: Johannes Kepler Universität Linz, short: JKU) is a public institution of higher education in Austria. It is located in Linz, the capital of Upper Austria. It offers bachelor's, master's, diploma and doctoral degrees in business, engineering, law, science, social sciences and medicine.

Software Competence Center Hagenberg (SCCH) is a non-university research center that has been driving excellence in applied research in the fields of data science and software science for over 20 years. This focus enables optimal implementation of projects in the fields of digitalization, Industry 4.0 (the smart factory) and artificial intelligence. SCCH serves as an interface between international research and domestic industry, and SCCH researchers conduct world-class research.

Guangdong University of Technology (GDUT) is a provincial university in Guangzhou, Guangdong, China. The university offers a range of courses in engineering, science, technology, management, liberal arts and law, with major emphasis on the study of engineering.

The Shenzhen Institutes of Advanced Technology (SIAT) of the Chinese Academy of Science (CAS) was jointly established by CAS, the Shenzhen municipal government and the Chinese University of Hong Kong in February 2006. SIAT aims to enhance the innovative capacity of the equipment manufacturing and service industries in the Guangdong-Hong Kong region, promote the development of emerging industries possessing their own proprietary intellectual property, and become a world-class industrial research institute.

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