



Vol. 2, No. 1: January 2021

NEWSLETTER

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Editor's Note

Dear PPRS Family!

I wish you a very safe and blessed New Year and present to you the latest edition of PPRS Newsletter. As the pandemic situation continues to reshape our daily life style, it has also remodeled our working mechanisms. Online classes, virtual conferences and webinars have become a new norm. This is the reason that despite strict lockdowns, our members have been actively indulged into various activities. We have also seen an increased reliance on Artificial Intelligence-based technologies during the pandemic. For this reason, the theme of this edition is **Artificial Intelligence**. I hope you enjoy it.

Momina Moetesum (Editor in Chief)

Achievement Corner

Prof. Dr. Faisal Shafait president PPRS has been creating a significant impact in the field of Artificial Intelligence through his extended research and international recognition. Recently, his name was featured in the list of the **World's top 2% scientists** issued by Stanford University. The scientists were selected based on their career-long citation impact until the end of year 2019 as well as for their citation impact in a single year (2019).

Apart from his profound research work, Dr. Shafait has been providing excellent contributions in academia as well. To honor his dedication towards his profession, he was recently bestowed with **"School Best Teacher Award 2020"** by his institute SEECS (NUST). Furthermore, to honor his efforts towards pushing research and innovation to the frontiers of market and industry, he has also been awarded as **'School Best Innovator 2020'**. For these remarkable achievements, we extend our heartiest congratulations to Prof. Dr. Faisal Shafait.



AI Lounge - Welcome to the Future

They say that **AI is the New Literacy**, and indeed they are right. In this report, Ms. Aymen Tasneem (Managing Director of AI Lounge) introduces AI Lounge initiative to our readers.

Who are we?

AI Lounge is an initiative taken by a group experts from the academia and the industry with a vision to become a leading hub for training programs in Artificial Intelligence (AI). We are driven by the values of innovation, and integrity with primary focus on cultivation of AI technology in different domains.

Experts at AI Lounge strive to carry out such training camps, workshops and bootcamps that can help to nurture young talent in AI and enable them to compete in the international market and to lead companies to exceptional performance through introduction of automation.

We aim to be a benchmark for training and research for companies, professionals, trade associations, industry and process-based groups.

Why AI Lounge?

Unlike other MOOCs, the courses offered by AI Lounge have instructor driven live classes for a more personalized experience. The training team includes some of the most highly qualified professors, PhDs and industry experts in the field. We also have foreign experts of the domain to train you in the new technologies of AI.

Our team is equipped with all the latest technologies and is capable of providing top notch trainings in Artificial Intelligence. Our goal is to fill the gap between course work and market demands that graduate students face after graduation by providing them a hands-on experience in AI.



Prof. Dr. Faisal Shafait
(Advisory Board Member)



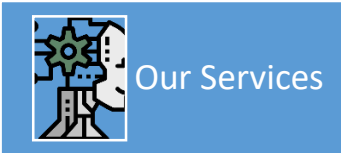
Dr. Hassan Aqeel
(Founder, CEO - AI Lounge)



Dr. Adnan Ul-Hasan
(Co-Founder, AI Lounge)



Ms. Aymen Tasneem
(Managing Director)



Events & Activities



Aug 2019, AI for Future: Marcus Liwicki, one of the top 50 AI experts in the world talked about **AI for Future** along with Dr. Faisal Shafait, SEECS-NUST, Shahrukh Babar, Xylexa and Dr. Hasan Aqeel, CEO AI Lounge. The event was held in NIC.

Jun - Jul 2020, Teen Quarantine Camp: Teen Quarantine Camp's 1st session was launched in June, and 2nd session was launched in July. It covered Machine Learning, scratch programming, speech recognition applications using voice commands and image classification.

July 2020, Bootcamp on ASR: The course was launched in July and lasted for 5 weeks. It covered automatic speech recognition, its working and real-life applications, language modeling, training and recognition.

different parts of the world shared their unique perspectives on the applications of AI in Neuroscience and Healthcare, with a special focus on EEG signal analysis.

AI Winter Camp: This camp was offered in winter vacations for kids. In 10 days camp, kids learned machine learning, scratch programming and basics of AI.

08 Jan 2021, Webinar on AI at Scale: This webinar covered how scaling artificial intelligence can create a massive competitive advantage for companies in the market.

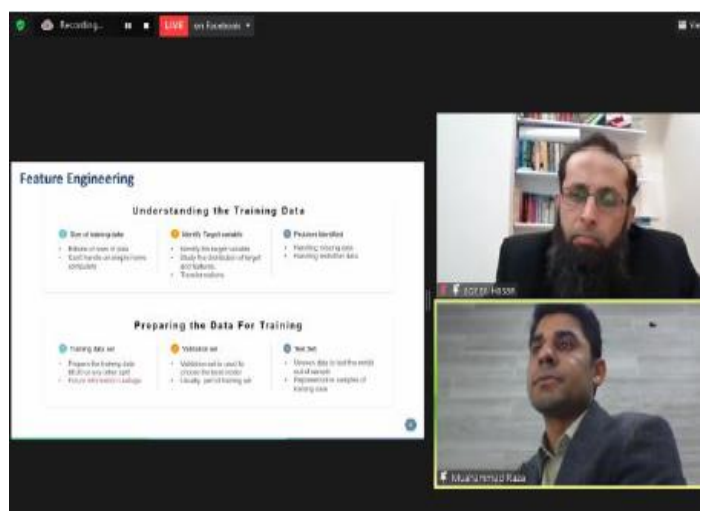
For details follow on Facebook: [@aibethak](https://www.facebook.com/aibethak)



Aug 2020, Wizkids: Wizkids 1st Session was launched in August, it covered Scratch programming and introduced the building blocks of machine learning and cognitive services using audio/ video input to students.

Sept 2020, Code Aficionados: Code Aficionados introduced students to Python Programming and how to build Mobile Apps and Python-based AI programs.

11 Dec 2020, Webinar on AI in Neuroscience and Healthcare: The webinar introduced the application of AI in Neuroscience and Healthcare. Renowned speakers from



Reported by: Aymen Tasneem



PPRS @ ICFHR 2020

The International Conference on Frontiers of Handwriting Recognition (ICFHR), formerly called International Workshop on Frontiers of Handwriting Recognition (IWFHR), is the most important scientific venue in the field of handwriting recognition. The aim of this conference is to bring together international experts from academia and industry to share their experiences and to promote research and development in all aspects of handwriting recognition and applications. A significant proportion of PPRS family specialize in automated handwriting analysis for various applications like writer identification and verification, cognitive and motor disorder detection, and script and handwriting recognition. Papers authored by PPRS members **Dr. Imran Siddiqi**, **Momina Moetesum**, and **Dr. Nazar Amin Khan** were selected for Oral Presentation in different categories.

An Attention based Method for Offline Handwritten Urdu Text Recognition

Tayaba Anjum and Nazar Amin Khan

Compared to derivatives from Latin script, recognition of derivatives from Arabic handwritten script is a complex task due to the presence of two-dimensional structure, context-dependent shape of characters, high number of ligatures, overlap of characters, and placement of diacritics. While significant attempts exist for Latin and Arabic scripts, very few attempts have been made for offline, handwritten, Urdu script. In this paper, we introduce a large, annotated dataset of handwritten Urdu sentences. We also present a methodology for the recognition of offline handwritten Urdu text lines. A deep learning based encoder/decoder framework with attention mechanism is used to handle two-dimensional text structure. While existing approaches report only character level accuracy, the proposed model improves on BLSTM-based state-of-the-art by a factor of 2 in terms of character level accuracy and by a factor of 37 in terms of word level accuracy. Incorporation of attention before a recurrent decoding framework helps the model in looking at appropriate locations before classifying the next character and therefore results in a higher word level accuracy.



Dynamic Handwriting Analysis for Parkinson’s Disease Identification using C-BiGRU Model

Momina Moetesum, Imran Siddiqi, Farah Javed and Uzma Masroor

Parkinson’s disease (PD) is commonly characterized by several motor impairments like tremor, muscular rigidity and bradykinesia that are collectively termed as ‘Parkinson’s disease dysgraphia’. In an attempt to identify these motor-based Parkinsonian symptoms, experts have persistently been evaluating various dynamic attributes of handwriting, like pen pressure/position, stroke speed/trajectory, and on-surface/in-air time taken, captured with the help of online acquisition tools. Such devices not only capture various aspects of handwriting but provide rich sequential information that can be utilized to identify unique patterns from handwriting samples of PD patients. In this paper, we propose a model based on Bidirectional Gated Recurrent Units (BiGRUs) to assess the potential of handwriting-based sequential information in the identification of Parkinsonian symptoms. One-dimensional convolution is applied to raw sequences and the resulting feature sequences are employed to train the BiGRU model for prediction. The results of our experiment validate the potential of our proposed technique in comparison to the state-of-the-art.

Reported by: Momina Moetesum

WEBINAR

ROLE OF ARTIFICIAL INTELLIGENCE IN ENVIRONMENT MONITORING

August 24, 2020 | 1300-1600 Hrs (PKT)



www.pprs.org.pk

info@pprs.org.pk

@pprs_iapr

Reported by: Hira Masood

A webinar on the **Role of Artificial Intelligence in Environment Monitoring** was successfully organized on 24 August 2020 via Zoom. The online event primarily focused on how cutting-edge technologies like Artificial Intelligence can mitigate the impact of climate change and environment degradation. More than six hundred individuals registered for the webinar, while one hundred and sixty-five attended the event.

The event was graced by **Mr. Rehan Abdul Baqi**, Vice Chancellor of Institute of Space Technology, Islamabad, who gave a keynote speech on the overall institutional capacity and the role of technological advancements in bringing Pakistan at par with the international paradigm.

International Speakers:

1. Prof. Dr. Adrian Ulges, HSRM, Germany
2. Prof. Dr. Ulrcih Schwanecke, HSRM, Germany

National Speakers:

1. Dr. Muhammad Shahzad, NUST
2. Dr. Muhammad Imran Malik, NUST

3. Dr Sajid Ghuffar, IST, Islamabad
4. Mr. Asif Javed, BU, Islamabad

Webinar Highlights

The webinar started with the opening remarks of **Prof. Dr. Faisal Shafait** who highlighted the importance and far-reaching implications of using cutting edge technologies to save the planet.

Talk: Aerial Photography by Unmanned Aerial Vehicles

Speaker: Prof. Dr. Ulrcih Schwanecke, HSRM, Germany

The first talk was delivered by **Prof. Dr. Ulrich Schwanecke** who is a full professor for Computer Science in the Faculty of Design - Computer Science- Media at RheinMain University of Applied Sciences. Prof. Dr. Ulrich Schwanecke elaborated the use of Aerial photography carried out by Unmanned Aerial Vehicles (UAVs) for environmental monitoring. The talk was followed by a brief question and answer session conducted by Dr. Ulrich.



Talk: *Glacier Mapping using Convolutional Networks*

Speaker: Dr. Sajid Ghuffar, IST, Islamabad

The second talk was delivered by **Dr. Sajid Ghuffar** from the Institute of Space Technology, who highlighted the use of Convolutional Neural Networks to perform Glacier Mapping that can give us the status of glacier degradation in Northern areas. The audience found the topic very interesting and had a lot of questions for Dr. Sajid leading to a very interactive discussion session afterwards.

Talk: *Machine Learning for Monitoring Billion Tree Tsunami Project, KPK*

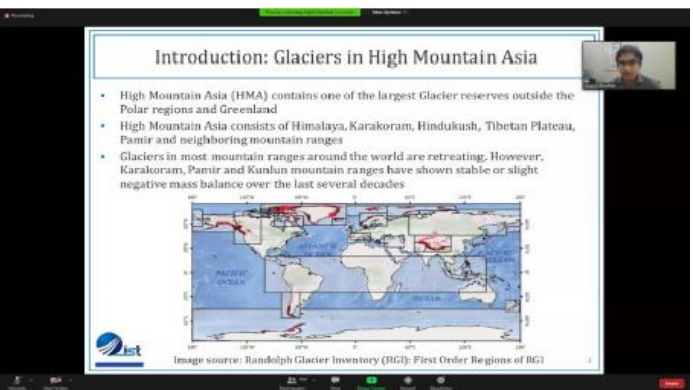
Speaker: Dr. Muhammad Shahzad, SEECS, NUST, Islamabad

The third talk was conducted by **Dr. Muhammad Shahzad** from SEECS, NUST who gave his valuable insights on how remote imagery can be utilized to monitor deforestation in Pakistan. He particularly shed light on the monitoring of the **Billion Tree Tsunami** project in KPK using UAVs and satellite imagery.

Talk: *Critical Environmental Issues & Role of Technology*

Speaker: Mr. Asif Javed, BU, Islamabad

The fourth talk was given by **Mr. Asif Javed** from Bahria University where he highlighted the current environmental issues and the factors that are contributing in the degradation of the environment.



He gave his valuable suggestions on how technology can help overcome the challenges faced by the planet and conserve the natural resources. He also pointed out the vital issue of carbon foot print of technology.

Talk: *Water Resource Estimation by Satellite-Based Image Analysis*

Speaker: Dr. Imran Malik, SEECS, NUST, Islamabad

The fifth talk was given by **Dr. Muhammad Imran Malik** from SEEECS, NUST who poured in his comments on how the satellite imagery can be exploited to obtain the information about the water resource degradation.

Talk: *How do you feel about Climate Change? Assessing Public Sentiment using Social Media Mining*

Speaker: Prof. Dr. Adrian Ulges, HSRM, Germany

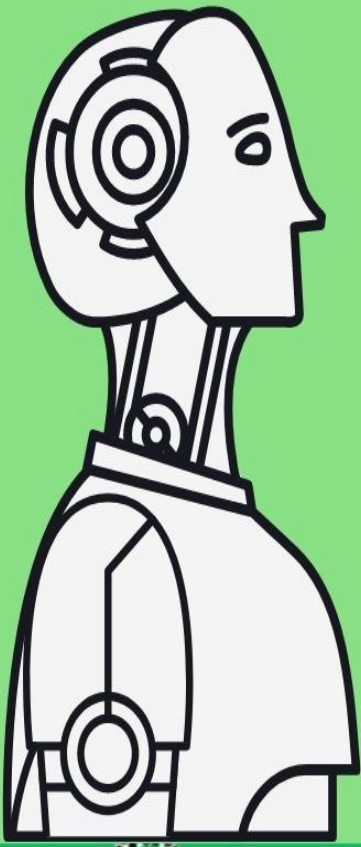
The last talk was given by **Prof. Dr. Adrian Ulges** where he briefed about the climatic change and how the public sentiments about it can be assessed through social media mining.

Closing Remarks:

The closing remarks for the webinar were given by **Prof. Dr. Khurram Khurshid** from Institute of Space Technology, Islamabad. He emphasized on how AI can be a part of every modern solution. He thanked the speakers for their insightful views and appreciated the participants for the interactive discussion sessions.




Upcoming PPRS Events Alert




WORKSHOP ON

HANDS-ON DEEP MACHINE LEARNING & AI


Learn to make Algorithms and their implementation in Python from Deep Learning & AI experts and get the hands-on experience that will prepare and equip you with the in-demand skills required to become a successful AI practitioner.




Feb 15 and 16, 2021
0900 - 1600 Hrs (PKT)




<https://forms.gle/WbZfau8WisQ637eE7>
Registration Fee: Rs. 10,000/-




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Trainers




PROF. DR. KHURRAM KHURSHID




DR. FARRUKH AZIZ BHATTI




DR. ABDUR RAHMAN MAUD




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INSTITUTE OF SPACE TECHNOLOGY (IST), ISLAMABAD



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WEBINAR ON

YOUR FIRST STEP TOWARDS DATA SCIENCE

12th Feb | Friday | 7:00 PM





with Mr. Adnan Zaidi

AI LOUNGE PRESENTS

ML USING SPARK

3 WEEKS LONG COURSE

COMING SOON!





AI Lounge
PRESENTS

Upcoming IAPR Events Alert



ICDAR is the premier international event for scientists and practitioners involved in document analysis and recognition, a field of growing importance in the current age of digital transition. In 2021, the 16th edition of this flagship conference will be held for the first time in Switzerland. For details visit: <https://icdar2021.org/>

February 8, 2021: Paper submission deadline

ICDAR is a main event of IAPR Technical Committee TC-11 (Reading Systems). To know more about IAPR TC-11 and to receive its monthly newsletters, please join the TC-11 mailing list. For details visit: http://www.iapr-tc11.org/mediawiki/index.php?title=IAPR-TC11:Reading_Systems You may also check out TC-10 by visiting: https://iapr-tc10.univ-lr.fr/?page_id=53

Conference Pre-Events

- ICDAR 2021 Workshop on Graphics Recognition (GREC 2021, 14th edition)
- ICDAR 2021 Workshop on Camera-Based Document Analysis and Recognition (CBDAR 2021, 9th edition)
- ICDAR 2021 Workshop on Historical Document Imaging and Processing (HIP 2021, 6th edition)
- ICDAR 2021 Workshop on Arabic and Derived Script Analysis and Recognition (ASAR 2021, 4th edition)
- ICDAR 2021 Workshop on Computational Document Forensics (IWCDF 2021, 3rd edition)
- ICDAR 2021 Workshop on Future of Document Analysis and Recognition (FDAR 2021, 3rd edition)
- ICDAR 2021 Workshop on Human-Document Interaction (HDI 2021, 3rd edition)
- ICDAR 2021 Workshop on Machine Learning (WML 2021, 3rd edition)
- ICDAR 2021 Workshop on Open Services and Tools for Document Analysis (ICDAR-OST 2021, 3rd edition)
- ICDAR 2021 Workshop on Industrial Applications of Document Analysis and Recognition (WIADAR 2021, 2nd edition)
- ICDAR 2021 Workshop on Computational Paleography (1st edition)
- ICDAR 2021 Workshop on Document Image and Language (WDIL 2021, 1st edition)
- ICDAR 2021 Workshop on Document Visual Question Answering (DocVQA 2021, 1st edition)
- ICDAR 2021 Workshop on Graph Representation Learning for Scanned Document Analysis (GLESDO 2021, 1st edition)

You may also explore ICDAR competitions:
<https://icdar2021.org/competitions/all-10-short-term-competitions/>



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Ideas for features you'd like to see in the PPRS Newsletter?
Send your comments to: newsletter.pprs@gmail.com