

# NEWSLETTER

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## Editor's Note

Dear PPRS Family!

Welcome to the latest issue of the PPRS newsletter. Despite the fluctuating trends of the pandemic; change in life-style, increased hygiene awareness, and vaccination has enabled us to resume normal activities of life to some extent. Through a hybrid mode many institutions are resuming teaching and learning. Travel restrictions are also easing, allowing conferences and workshops to invite participants with an option to attend either physically or virtually. During all this time, PPRS has also been actively organizing events like webinars, trainings, workshops, and camps on various topics. However, the topic that has been of prime interest is **Deep Learning & its Applications**. You will find highlights of some of these activities in the current issue. We have also introduced a new section **Research@PPRS**, where we will be discussing the latest research projects being conducted by members of PPRS. Enjoy Reading!!!

*Momina Moetesum (Editor in Chief)*

## Dawn of a New Era - Deep Learning

Mankind has been extending its abilities through technology. We made machines that augment human strength and speed. Now we want technology that can **LEARN** and not just **FOLLOW** instructions. Mimicking human intelligence, perception and decision making has always been a fantasy seen in movies and sci-fi books, but no more! From machine learning to deep learning, we are developing machines with an IQ. While we may still be far from a perfect humanoid, the possibilities are endless.

Talking about machine intelligence, several of PPRS ExCo members are going to deliver talks on the National Artificial Intelligence Forum 2021. Don't miss it out!

Listen to an Exciting Line-up of Speakers at NAIF 2021

Prof. Dr. Atta-ur-Rahman Prof. Dr. Muhammad Mujahid Dr. Atif Mashkooor Dr. Muhammad Haroon Yousaf

Muhammad Shafique Dr. Hassan Shahzad Dr. Khurram Khurshid Dr. Asif Janshed

Haroon Kanth Dr. Faisal Shafait Dr. Qaisar Ahsan

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## Research @ PPRS



### AI Driven Decision Support System for Pakistani Judiciary

PROFESSOR DR. FAISAL SHAFIT (NUST-SECS)  
DR. ADNAN UL-HASAN (DEEP LEARNING LAB, NCAI)

#### DLL, NCAI AND SCP

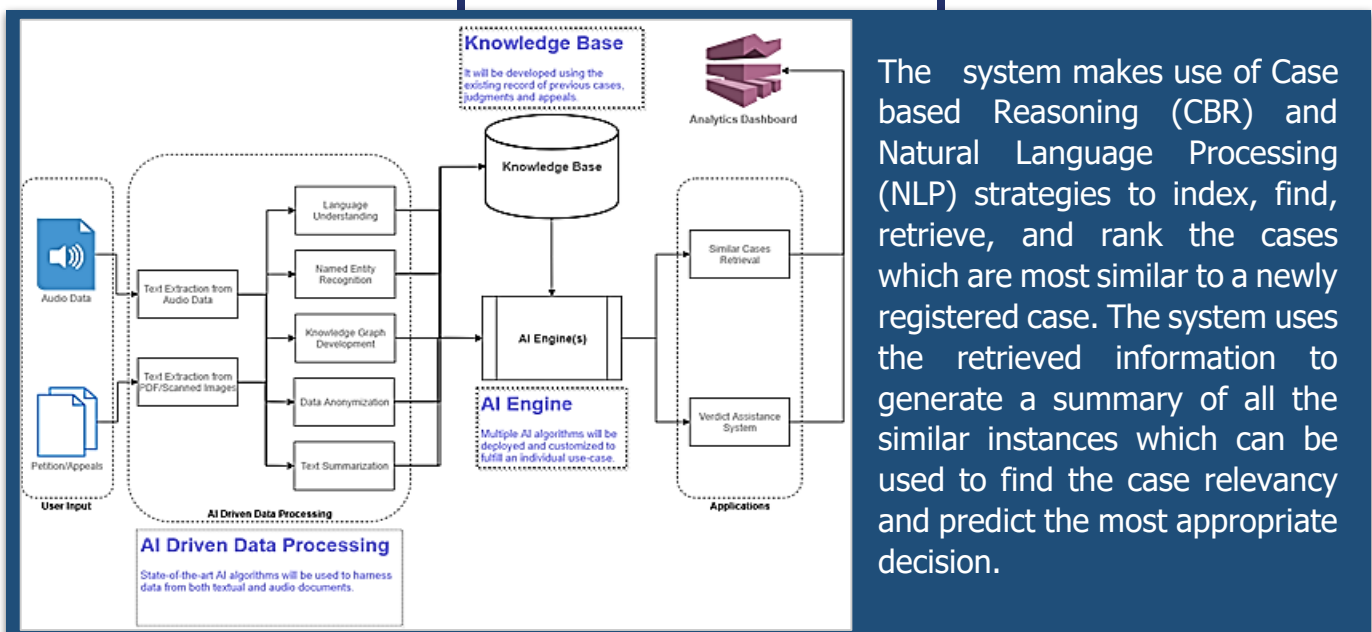
The [Deep Learning Lab \(DLL\)](#), NCAI is working closely with the legal and IT experts of the Supreme Court of Pakistan to automate key judicial processes. We are at the very beginning of this journey and are committed to contribute to this challenge of national significance.

#### PROBLEM

Due to non-standard IT systems, insufficient tools and lack of knowledge, the case preparation time is very long, the decisions made at lower courts are inconsistent across the country and the justice disbursement is painstakingly slow.

#### SOLUTION

A system which can automatically extract case information, retrieve similar cases and recommend a verdict will not only reduce human effort but also lessen the amount of time it'd take to retrieve similar cases.



1. A **knowledgebase** digitizing the existing records to be consumed by AI algorithms.
2. **Relevant case retrieval** system that will find similar cases from the existing knowledge base.
3. **Data driven verdict recommendation** system that will recommend the likely outcome of a petition.
4. **Speech to text** system to create the courtroom proceedings of a given session.
5. **Data anonymization** of publicly available data to comply with GDPR and other privacy regulations.

**Components  
of A.I.  
Driven Data  
Analytics  
Platform**

## Events & Activities

Despite the restrictions of the pandemic, PPRS has been actively organizing events like workshops, trainings and camps in a hybrid mode. This report highlights some interesting ones that have been taking place in the past six months.

### WORKSHOP ON DEEP MACHINE LEARNING & ARTIFICIAL INTELLIGENCE

A comprehensive hands-on CPD workshop on Deep Machine Learning and AI was successfully conducted by PPRS at [iVision Lab](#) of Institute of Space Technology (IST). The workshop was delivered over 6 sessions in 2 days on **15-16 February 2021**. A total of 24 participants attended the workshop where they were equipped with the working of deep learning models through hands-on exercises. Model training from scratch, relevant implementation tools and techniques to achieve highly accurate results were mainly focused. Concepts of transfer learning were explained and participants were familiarized with the freely available, state-of-the-art pre-trained models to save time and complexity. On successful completion of the workshop, participants were awarded certificates and one CPD point from PEC.



### TRAININGS ON DEEP LEARNING APPLICATIONS

Due to its success, deep learning has prompted researchers to revisit several computer vision problems. Deep learning solutions have outperformed most of the conventional techniques in most of these scenarios. However, a one-fit-all model is far from reality as every problem comes with its own challenges. To better understand the requirements of different real-world problems and to understand how different deep learning models can be employed in the relevant situation, PPRS has been conducting a series of trainings in collaboration with [Deep Learning Lab \(DLL\)](#), NCAI, NUST.

#### OBJECT DETECTION & RECOGNITION

The first training was conducted on the topic of Deep Learning for Object Detection & Recognition from 1st-5th March 2021, in a hybrid mode. The workshop was aimed to familiarize the participants with the underlying architecture and algorithms used for Object Detection and Recognition and get hands-on experience with the training of deep learning models. The training was a huge success amongst the participants.

#### DOCUMENT ANALYSIS & RECOGNITION

The second training was held on 5th-9th April 2021 that focused on Deep Learning for Document Analysis & Recognition. DAR has found wide-ranging interesting applications in both commercial and research-driven systems through the core areas like page segmentation, skew detection, text-orientation detection, word segmentation, and pattern matching. The 5-Day workshop delivered high-quality content and imparted hands-on training for the state-of-the-art research in the field using LSTMs and OCR.

### Collaborators



# ARTIFICIAL INTELLIGENCE SUMMER CAMP FOR MINORS



Advancements in the world of artificial intelligence have grown by leaps and bounds over the last decade, transforming from what was originally a sci-fi pipe dream to what may be one of the most important technologies humans have ever invented. Kids today are seeing AI miracles revolutionize education, entertainment, home, and much more. It is high time they understand how this magic works.

An extremely informative and fun-filled Summer Camp on AI & Robotics for kids was successfully organized by PPRS in collaboration with [iVision Lab](#) at **Institute of Space Technology (IST)** from **5-9 July 2021**. The camp consisted of 15 sessions in total spanned over 5 full days. The kids learnt the basics of artificial intelligence & robotics. They built their own robots for **Robo Race** and **Robo War** competitions that were held on the last day of the camp. Dean IST Dr. Suhail distributed the certificates amongst the participants.



*Reported by: Dr. Khurram Khurshid*

## Upcoming PPRS Events Alert

**AI LOUNGE IS**  
CELEBRATING ACHIEVEMENTS OF  
**PAKISTANI**  
**WOMEN IN AI**



Scan to Register

**HOST**  
**DR. MOMINA MOETESUM**  
MANAGER, PAKISTAN PATTERN RECOGNITION SOCIETY  
ASSISTANT PROFESSOR, BAHRIA UNIVERSITY

**MONDAY**  
**27TH SEPT**  
**2021**

**SECS**  
**NUST- H12**

**9 AM - 5 PM**  
**FREE OF COST**

TALKS | PANEL DISCUSSION | NETWORKING



**SPEAKERS**

  
**DR. SEEMAB LATIF**  
FOUNDER, AAWAZ  
IEEE SENIOR MEMBER

  
**DR. ZUNAJRA SAGIB**  
MA HRD AND CONSULTING,  
LANCASTER UNIVERSITY, UK

  
**DR. MAJIDA KAZMI**  
RESEARCHER  
NED UNIVERSITY

  
**AASIA KHANUM**  
ACADEMIA  
FORMAN CHRISTIAN  
COLLEGE, LAHORE

  
**DR. RABIA IRFAN**  
ASSIST. PROFESSOR  
SECS - NUST

  
**AASIA KHANUM**  
PROJECT MANAGEMENT  
CONSULTANT -  
KNOWLEDGE HUB

  
**MARIAM KIRAN**  
RESEARCH SCIENTIST,  
LAWRENCE BERKELEY  
NATIONAL LABORATORY

  
**NOSHEEN ABID**  
PHD STUDENT, LULEÅ  
UNIVERSITY OF  
TECHNOLOGY

  
**SHAHRUKH MALIK**  
SENIOR EXECUTIVE -  
CUSTOMER  
INTELLIGENCE, Ufone

  
**MARIA NAZIR**  
TEAM LEAD  
INSTITUTE OF SPACE  
TECHNOLOGY ISLAMABAD

  
**URIDAH SAMI**  
SENIOR ML ENGINEER,  
RED BUFFER

  
**UZMA NAZIR**  
RESEARCH FELLOW, CENTRE  
FOR HUMAN RIGHTS (CFHR)

  
**SANA MOHSIN**  
PROGRAM MANAGER  
CASE IT

IAPR is a gender diverse society and promotes equal representation of female researchers and professionals. Keeping up with the same tradition, PPRS is working hard to encourage its female community to come forward and participate more in order to bridge the gender gap. To achieve our objective, we are organizing an event in collaboration with [AI Lounge](#) that aims to acknowledge and celebrate women professionals, techpreneurs, researchers and professors in Pakistan. We wish to support female founders and innovators in AI-by providing them a platform for showcasing their work in this field. We hope that events like this will encourage aspiring female students and professionals to follow in the same footsteps and help bridge the gender gap in the AI ecosystem. So come and meet our women in AI!!!

Event will be held on 27th Sept at SECS - NUST

Registrations for the event are now open.

Register yourself today as only limited seats are available.

Register here: [Registration-Form](#)

For more details, visit: <http://ai-lounge.com/pakistani-women-in-ai>

*While we are at it, let's celebrate our own female members in AI as well!!!*



## Upcoming IAPR Events Alert



**4th IAPR Summer School on Document Analysis** is being organized in **Luleå, Sweden** on **23<sup>rd</sup>-27<sup>th</sup> August 2021**. Due to the restrictions of Covid-19, the school is taking place in a hybrid mode allowing participants to attend either virtually, or physically. The objective of the school is to provide the participants with different aspects related to **digital transformation of documents and beyond**. All the latest research being carried out in the field of document understanding, document (image) analysis, natural scene text detection and recognition, historical document analysis, Corona and Virtualization, and new topics will be covered in the school. The summer school will provide a great opportunity to participants to expand their knowledge and skills by linking the theory with the real implementation. Speakers from different areas of expertise will be invited to enrich the overall impact of the school.

For details visit: <https://buff.ly/3BpGtzO>



Following the four successful events, the 5th edition of MedPRAI will be held in **Istanbul (Turkey)** from **17<sup>th</sup> to 18<sup>th</sup> December 2021**. MedPRAI is organized by the Department of Computer Engineering, Istanbul Sabahattin Zaim University; it aims to provide researchers and practitioners from academia and industry with a forum on the latest developments in pattern recognition and artificial intelligence. The conference will also provide a unique opportunity for sharing experiences from different backgrounds with the common interest in advanced methods in the above-mentioned fields. The scientific program of MedPRAI 2021 will include the presentation of invited plenary talks, regular sessions, poster sessions and some special sessions.

For details visit: <https://medprai2021.sciencesconf.org/>

To know more about IAPR activities and to receive its monthly newsletters, visit: <https://iapr.org/>



*Thoughts on articles you've read in this issue of the PPRS Newsletter?*

*Ideas for features you'd like to see in the PPRS Newsletter?*

*Send your comments to: [newsletter.pprs@gmail.com](mailto:newsletter.pprs@gmail.com)*