2023 IEEE CIS Summer School

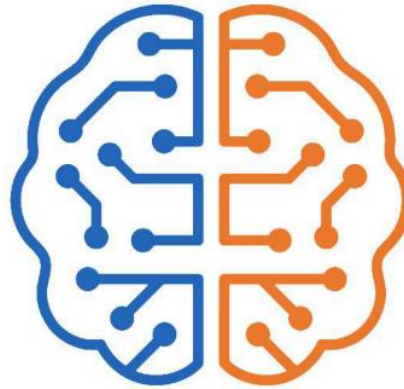# on Explainable Image and Text Processing

Co-sponsored by Sohar Port and Freezone

University of Technology and Applied Sciences, Suhar

Sultanate of Oman

December 11-13, 2023

https://airilsutas.com/

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About IEEE CIS Summer School

Welcome to the 2023 IEEE CIS Summer School on Explainable Image and Text Processing, an immersive event jointly sponsored by the IEEE Computational Intelligence Society and Sohar Port and Freezone. Hosted by the University of Technology and Applied Sciences in Suhar, Sultanate of Oman, this educational initiative, which took place from December 11 to 13, 2023, aimed to provide a valuable learning experience for recent graduate students in IT/CS, research enthusiasts in AI, and job seekers with a foundational understanding of AI and programming skills in Python. Acknowledging the critical importance of Explainable Image and Text Processing in contemporary artificial intelligence, the summer school addressed the need to understand and interpret the decisions made by AI systems. Emphasizing explainability, enhanced transparency and trust, addressing concerns related to bias, accountability, and ethical considerations in AI. Through participation in this program, attendees gained insights into the importance of developing AI models that are not only accurate but also interpretable, thereby contributing to the establishment of responsible and reliable AI systems.

Objectives

The summer school will be an opportunity for graduate students, research aspirants and IT employees with basic knowledge of AI and programming skills in Python. The school would provide them with an interactive learning environment in recent applications of Deep Learning in Computer Vision and Natural Language Processing. The participants will get exposed to recent trends in AI and stimulated to pursue research in evolving areas of global demand.

Sponsors

We extend our sincere appreciation to our generous sponsors, Sohar Port and Freezone, and the IEEE Computational Intelligence Society, for their co-sponsorship. Their support has played a crucial role in making the 2023 IEEE CIS Summer School on Explainable Image and Text Processing happen.

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Venues and dates

The summer school was hosted at the Artificial Intelligence Lab, University of Technology and Applied Sciences, Suhar campus, Oman. The event was spread over 3 days from December 11 to 13 (Monday to Wednesday). Lectures and practical sessions were conducted by experts in their respective fields.

AI Lab

The Artificial Intelligence Lab is one of its kind, state-of-the-art facility in Oman. The lab is primarily for research and innovation in the field of AI. It was sponsored by Sohar Port and Freezone. The lab is located on the topmost floor of Engineering Labs building in UTAS, Suhar campus.

Figure 1 A side of AI lab

At present the lab consists of 16 high performance computers, being used for the development of Computer Vision and Natural Language Processing models. We have some exchange students from Denmark, working on an object detection project with Sohar Port and Freezone.

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Registration

The summer school was open to students doing research, post-graduate, or final year graduation in universities across Oman. Preference will be given to those with prior knowledge of machine learning, programming, and statistics. Membership of IEEE is not necessary for enrollment.

Attending all the sessions is mandatory. The participants need not bring their laptops, as they will use the machines in the AI Lab. In case any accommodation is necessary, organizers may assist in catering on a need basis.

Expert Speakers

Mr. Viswan Vimbi
Lecturer, IT department,
University of Technology and Applied Sciences, Suhar campus

Dr. Noushath
Assistant Professor, Research and Innovation dept.,
University of Technology and Applied Sciences, Suhar campus

Mrs. Sudha Senthilkumar
Lecturer, IT department,
University of Technology and Applied Sciences, Suhar campus

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Dr. Duhai Alshukaili
Senior lecturer, IT department,
University of Technology and Applied Sciences, Ibri campus

Dr. Suresh Palarimath
Senior lecturer, IT department,
University of Technology and Applied Sciences, Salalah campus

Dr. Abdelhamid Abdesselam
Associate professor, CS department,
Sultan Qaboos University, Muscat

Dr. AbdulRahman AalAbdulsalam
Assistant professor, CS department,
Sultan Qaboos University, Muscat

Dr. Mohamed Abdul Karim Sadiq
Assistant professor, IT department,
University of Technology and Applied Sciences, Suhar campus

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Egnr. Selvakumar Panneer
Principal Engineer (Graphics & AI),
Intel USA

Mrs. Arwa AlSariri
Lecturer, IT department,
University of Technology and Applied Sciences, Suhar campus

Dr.Thirumurugan Shanmugam
Assistant professor, IT department,
University of Technology and Applied Sciences, Suhar campus

Dr.Karthikeyan Supramanian
Assistant professor, IT department,
University of Technology and Applied Sciences, Suhar campus

Engr. Sufyan AlMamari
Senior Engineer, Asset Management
Sohar Port and Freezone

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Participants statistics

The IEEE summer school program attracted 25 participants, of which only 18 were selected, despite the AI lab having the capacity of 16 machines. This selection reflects a keen interest in the program and a high level of competition among applicants.
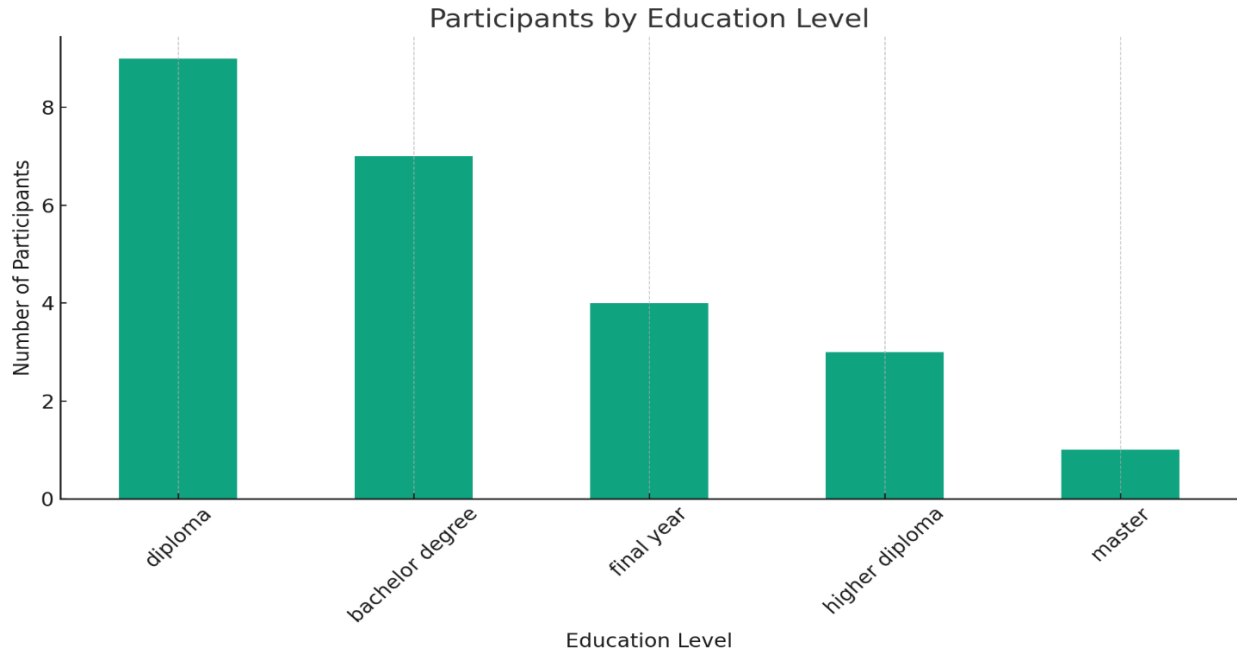

Figure 2 Participants Education Level

The educational background chart shows the diverse qualifications of the participants, ranging from diplomas to master's degrees. This diversity highlights the wide appeal of the program across various educational levels.
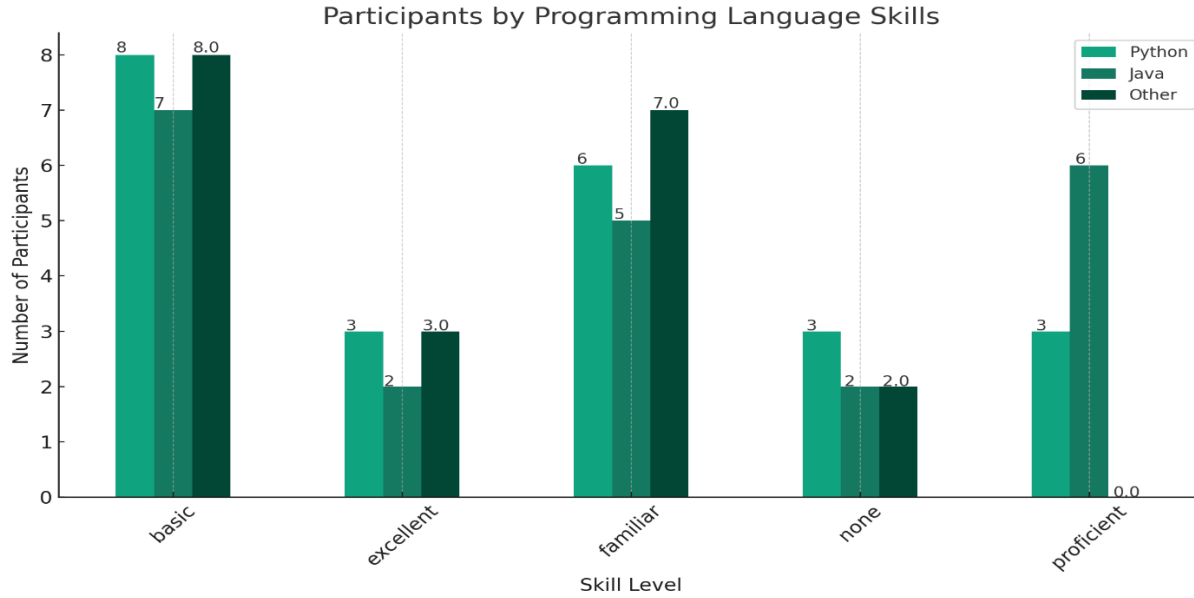
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Figure 3 Participants Skill Level

The programming skills chart categorizes proficiency in Python, Java, and other languages, with levels from 'None' to 'Proficient'. The bar heights in the chart indicate the number of participants at each skill level, providing an insight into the collective programming capabilities of the group.
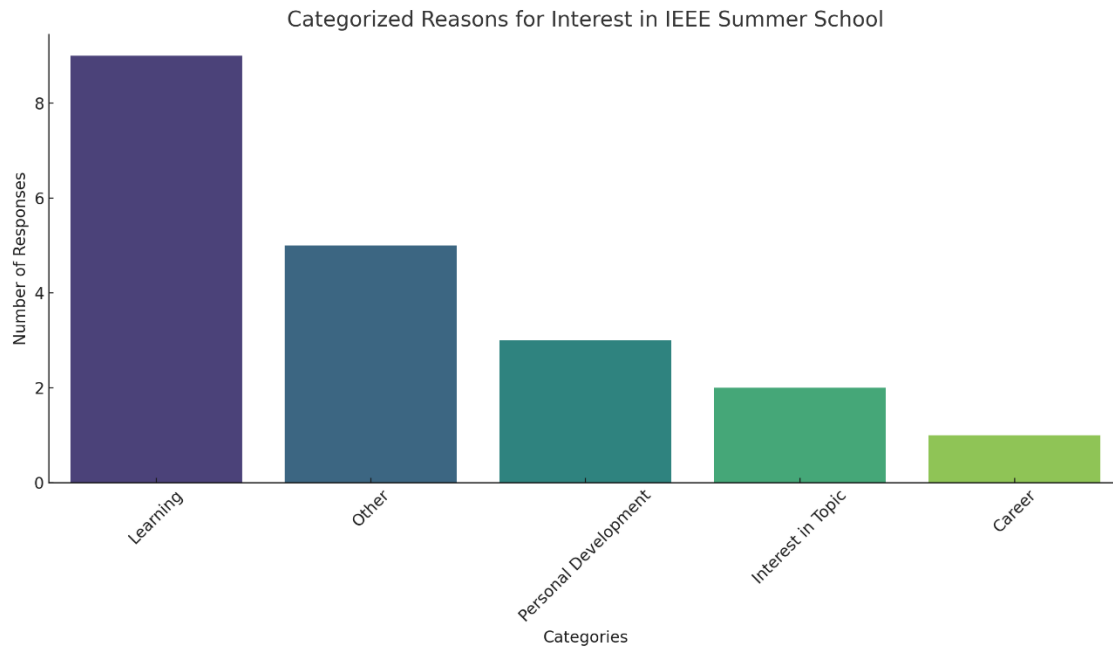

Figure 4 Participants Interest Reasons

Finally, the motivations chart categorizes reasons for joining the program, such as 'Learning', 'Networking', and 'Career'. The varying bar heights show the prevalence of each motivation, indicating that participants are driven by a mix of learning new skills, networking opportunities, and career advancement. This mix of motivations showcases the diverse aspirations of the participants.

Tentative program

December 11 Monday Engineering Labs building 'P' floor		
08:00 – 08:30	**Registration** *Ms. Muna Al-Belushi & Ms. Hafsa Al-Ansari*	Lobby
08:30 – 09:00	**Inaugural session** *Deputy to Asst.VC (Postgraduate studies, research & innovation)*	TTO hall
09:00 – 09:15	**Intro to IEEE CIS Summer School** *Dr. Mohammed AbdulKarim Sadiq*	TTO hall
09:15 – 10:00	**Applications of AI in Emerging Fields** *Dr. Karthikeyan*	AI Lab
10:00 – 10:30	**Refreshment**	**Lobby**
10:30 – 11:30	**Python Essentials for AI** *Ms. Arwa Al-Sariri*	AI Lab
11:30 – 12:30	**Data Analysis using Pandas** *Ms. Sudha Senthilkumar*	AI Lab
12:30 – 13:30	**Prayer and Lunch break**	**Dining hall**
13:30 – 15:00	**Real-time implementation of AI in IoT** *Dr. Thirumurugan*	IoT Lab

Figure 5 IEEE Summer School Day One

December 12 Tuesday Engineering Labs building 'P' floor		
09:00 – 10:00	**Computer Graphics & Visual Representation** *Er. Selvakumar*	Intel Labs
10:00 – 11:00	**CNN application to image processing & Computer Vision** *Dr. Abdelhamid, SQU*	AI Lab
11:00 – 11:30	**Refreshment**	**Lobby**
11:30 – 12:30	**Introduction to neural networks for NLP (classification and language modeling)** *Dr. Abdul Rahman Aal Abdulsalam, SQU*	AI Lab
12:30 – 13:30	**Prayer and Lunch break**	**Dining hall**
13:30 – 14:30	**NLP & Entity Recognition with johnsnowlabs tools** *Dr. Mohamed Abdul Karim*	AI Lab
14:30 – 15:30	**Applying AI Object Detection in Industrial Inspection** *Engr. Sufyan Al Mamari*	AI Lab

Figure 6 IEEE Summer School Day Two

December 13 Wednesday Engineering Labs building 'P' floor		
09:00 – 10:00	**Zero shot learning for object detection** *Dr. Suresh, UTAS-Salalah*	AI Lab
10:00 – 10:45	**Optimizing Medical Imaging Quality: An In-Depth Examination of Preprocessing Methods for Brain MRIs** *Mr. Viswan*	AI Lab
10:45 – 11:00	**Refreshment**	**Lobby**
11:00 – 12:30	**Prompt Engineering for Developers using ChatGPT** *Dr. Duhai Al-Shukaili, UTAS-Ibri*	AI Lab
12:30 – 13:30	**Prayer and Lunch break**	**Dining hall**
13:30 – 14:30	**Application of Artificial Intelligence in Alzheimer's Disease Detection** *Dr. Noushath Shaffi*	AI Lab
14:30 – 15:00	**Valedictory, certificates, feedback**	TTO

Figure 7 IEEE Summer School Day Three

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Organizers

General Chair:

- Dr. Mohamed Abdul Karim Sadiq

Steering Committee:

- Dr. Hanifa Al-Qasmi
- Dr. Fatma Al-Maqbali
- Dr. Noushath Shaffi
- Dr. Faisal Hajamohideen

Organizing Chair:

- Mrs. Dhiya Al-Saqri

Committee members:

- Mrs. Asma Al-Badi
- Mrs. Arwa Al-Sariri
- Dr. Thirumurugan
- Dr. Karthikeyan
- Dr. Rasha Shakir
- Mrs. Muna Al Belushi
- Mrs. Hafsa Al-Ansari
- Mrs. Alya Al-Harthi
- Mrs. Maha Al-Belushi
- Mrs. Raya Al-Khayari
- Mrs. Afaf Al-Alawi

Posters

IEEE SUMMER SCHOOL

11-13 DECEMBER

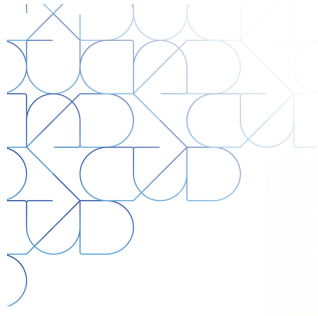The University of Technology and Applied Sciences, Suhar campus, in cooperation with Sohar Port, is delighted to invite you to participate in the 2023 IEEE Summer School - an immersive educational endeavor meticulously crafted to nurture knowledge and foster collaboration in the dynamic fields of Artificial Intelligence, particularly Image and Text processing.

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Broad Horizons

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IEEE SUMMER SCHOOL

11-13 DECEMBER

Online Session Invitation

December 12 (Tuesday)   9:00 – 10:00 AM
Computer Graphics and Visual Representation: An AI perspective

Engr. Selvakumar Panneer, Principal Engineer (Graphics and AI) Intel Labs, USA
Meeting Link: https://teams.live.com/meet/9542125135962?p=almArMTaJcnATe7J

Selva has over 25 years of professional product development experience in GPU driver development, 3D graphics/gaming & interactive graphics research. His innovative GPU performance optimizations & power saving techniques are featured in AMD GPU's, Intel Processor Graphics & Microsoft Windows 10 operating system. He is an ardent inventor with 25 granted patents to his credit.

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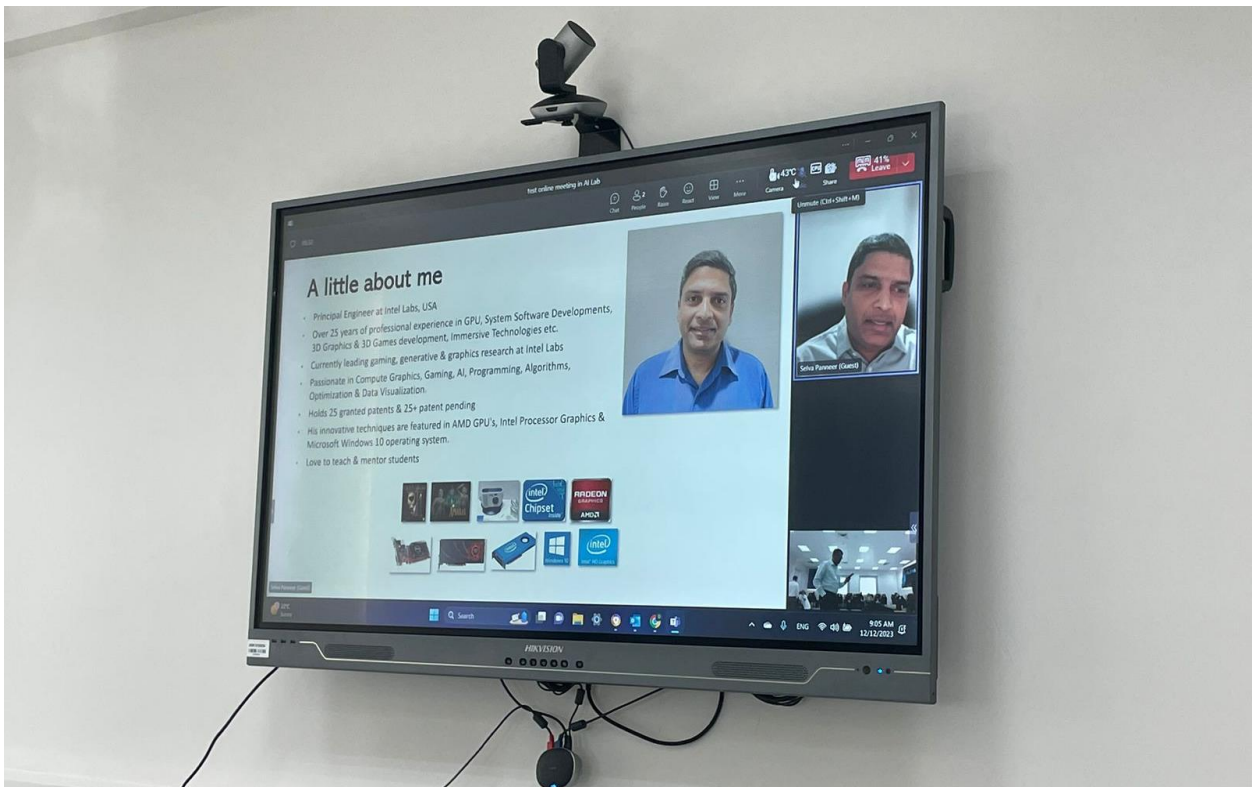
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Conclusion

The 2023 IEEE CIS Summer School on Explainable Image and Text Processing in Suhar, Oman, was a significant achievement, drawing a keen interest from a diverse group of attendees. The event's success is attributed to the collective efforts of dedicated committee members and esteemed speakers, who played pivotal roles in enriching the learning experience. This summer school underscored the importance of AI in modern technology, highlighting the need for educational programs that focus on explainable and responsible AI. The enthusiasm and engagement of the participants further emphasized the growing relevance of AI in various fields.