The 32nd AIAI Irish Conference on Artificial Intelligence and Cognitive Science

Arjun Pakrashi[1,3,*], Ellen Rushe[2], Brian Mac Namee[1,3,4], Rob Brennan[1,5] and Bezya Yaman[5,6]

[1]School of Computer Science, University College Dublin, Belfield, Dublin 4
[2]School of Computer Science, Dublin City University, Collins Ave Ext, Whitehall, Dublin 9
[3]The Insight Centre for Data Analytics
[4]SFI Centre for Research Training in Machine Learning
[5]ADAPT Centre
[6]School of Computer Science, Trinity College Dublin, College Green, Dublin 2

Abstract

The 32nd Irish Conference on Artificial Intelligence and Cognitive Science (AICS 2024), hosted by University College Dublin (UCD) in collaboration with Dublin City University (DCU), featured high-quality research in AI and cognitive science, with a focus on trustworthy AI, fairness, and bias mitigation. Of 82 submissions, 44 papers were accepted, covering applications in healthcare, smart mobility, financial forecasting, anomaly detection, and sports analytics, alongside fundamental machine learning advancements. Keynote speakers Dr. Susan Leavy (UCD) discussed AI's societal impact, while Prof. Eamonn Keogh (UC Riverside) critiqued research in time series anomaly detection. AICS 2024 reaffirmed its role as Ireland's leading AI research forum, fostering discussions on cutting-edge advancements and their societal implications.

The 32nd Irish Conference on Artificial Intelligence and Cognitive Science (AICS 2024)[1] was hosted by University College Dublin (UCD), Ireland, in collaboration with Dublin City University (DCU), Ireland. The conference was held in person on the Belfield campus of UCD.

With regular conferences dating back to 1988, the AICS Conference is Ireland's primary forum bringing together researchers in the fields of Artificial Intelligence and Cognitive Science. The fields of Artificial Intelligence and Cognitive Science — encompassing areas such as Data Analytics, Natural Language Processing, Information Retrieval, and Machine Learning — are now at the forefront of Irish computing research and industry making AICS more important than ever. The AICS 2024 program included presentations of high-quality theoretical and applied scientific papers from across the Irish research community and invited talks from world-class researchers.

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*Corresponding author.
arjun.pakrashi@ucd.ie (A. Pakrashi); ellen.rushe@ucd.ie (E. Rushe); brian.macnamee@ucd.ie (B. Mac Namee); rob.brennan@ucd.ie (R. Brennan); beyza.yaman@adaptcentre.ie (B. Yaman)
https://people.ucd.ie/arjun.pakrashi (A. Pakrashi); https://www.dcu.ie/computing/people/ellen-rushe (E. Rushe); https://people.ucd.ie/brian.macnamee (B. Mac Namee); https://people.ucd.ie/rob.brennan (R. Brennan); https://www.adaptcentre.ie/experts/beyza-yaman/ (B. Yaman)
0000-0002-9605-6839 (A. Pakrashi); 0000-0001-5869-5333 (E. Rushe); 0000-0003-2518-0274 (B. Mac Namee); 0000-0001-8236-362X (R. Brennan); 0000-0003-2130-0312 (B. Yaman)

[1]https://aics2024.ucd.ie/

Of the 82 submissions, we had 44 accepted papers this year. During the course of the two-day conference, 28 full-track, 12 student track, and four nectar track papers were presented. Of course, none of this would have been possible without the commitment of our Program Committee, of which there were 68 members. Among them were senior academics, postdoctoral researchers, and senior doctoral candidates. The hard work of the committee meant that all full track papers received at least three reviews and all student track papers received at least two reviews. Both the tracks were evaluated identically, maintaining the same review quality.

The papers presented at the conference covered the fields of AI and cognitive science covering healthcare, ethics, machine learning robustness, explainability, and real-world applications. A key theme was the need for trustworthy AI, with studies addressing fairness, transparency, bias mitigation in datasets and models, and the societal impact of AI. Unsurprisingly, given this focus, there were many papers focused on healthcare describing AI-driven models that improve speech recognition for individuals with impairments, medical diagnostics, and physical fatigue estimation using wearable sensors. Other application areas included smart mobility, financial forecasting, anomaly detection, space, and sports analytics. There were also papers focused on fundamental developments in machine learning, including optimization, security, robustness, class imbalance, calibration, efficiency, reliability, neural architecture search, and multimodal data integration. Overall, the papers presented highlighted the balance between theoretical advances and practical solutions, emphasizing the importance of trustworthy AI while addressing technical challenges and societal impact.

There were two keynote talks by Prof. Eamonn Keogh, University of California Riverside, and Dr. Susan Leavy, UCD. On the first day of the conference, Dr. Leavy gave a talk entitled "*AI, Society and Collective Intelligence*" discussing how AI is reshaping society, particularly by transforming the information ecosystem and how people acquire knowledge. This talk explores the societal impact of large language models and emerging efforts to mitigate associated risks. On the second day, Prof. Keogh gave a talk entitled "*The Emperor's New Algorithm: Why Most Time Series Anomaly Detection Papers Are Wrong*". This talk highlighted focused on Time Series Anomaly Detection which aims to identify unusual patterns in time series data. The talk highlighted challenges in this research field and argued that most recent papers in the field lack true contributions due to flawed experimental methods. The talk ended with an exploration of ways to improve the quality of research in this field.

Acknowledgments

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