

Seminar on

BUILDING ENERGY-EFFICIENT AND DEPENDABLE MACHINE LEARNING SYSTEMS

Abstract: The future of machine learning lies in highly distributed, resource-limited edge devices. This change requires a rethinking of algorithms, system designs, energy use, and trust. In this lecture, the speaker will discuss new architectures, algorithmic improvements, and hardware-software design approaches that underpin energy-efficient intelligence at the edge while ensuring dependability and explainability. The lecture will build on the speaker's recent work with neurosymbolic frameworks such as Tsetlin Machines to demonstrate how high performance can be achieved with significantly lower computational and energy costs. The lecture will conclude with reflections on the speaker's entrepreneurial journey of turning logic-based machine learning innovations into practical solutions for industrial edge AI, followed by discussions on research culture, internationalisation, and related opportunities.

02 January, 2026 (Friday)

2:30 PM

at IUT Auditorium



Speaker

PROFESSOR RISHAD SHAFIK

Professor Rishad Shafik (MIEEE, MIET) is the Deputy Head of Microsystems Research Group at Newcastle University and is known as an international leader of hardware/software co-design applied in machine learning systems. His research focuses on design methods, circuits, architectures and algorithms for sustainable and explainable machine learning systems. He has led/co-led major collaborative projects funded by EPSRC, ERC and industry with a grant portfolio of circa £40m. He has published extensively in leading journals and conferences with several winning the Best Paper Awards, and delivered invited talks and keynotes internationally. He has recently chaired/co-chaired major international IEEE flagship conference committees, e.g. IEEE SAS 2025, IEEE ISCAS 2025, ISTM2025 and guest edited several topical issues on energy-efficient and dependable machine learning in IEEE and Royal Society Transactions. He currently directs the Microsystems AI Lab and is a co-founder of Literal Labs UK.

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