

# Keynote: Rethinking AI Through Full Decentralisation

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## KEYNOTE ABSTRACT

Fully decentralised AI challenges the long-standing assumption that intelligence must reside in a centralised infrastructure. By allowing data to remain at its source and enabling models to evolve through peer-to-peer interactions, decentralised learning opens the door to AI systems that are privacy-preserving, sovereign, and deeply embedded in their operational environments.

However, removing the center also reshapes the problem space. How does collective intelligence arise from the structure of the underlying communication graph? What guarantees of convergence and robustness can we provide in the presence of unreliable links, heterogeneous data, or even adversarial behavior? And how can meaningful knowledge emerge when local signals are noisy or imperfect?

This keynote examines decentralisation not merely as a technical design choice, but as a conceptual shift. By embracing network structure, resilience, and collaboration as first-class elements, we can move toward AI systems that behave less like monolithic engines and more like adaptive, distributed ecosystems.

## KEYNOTE SPEAKER BIOSKETCH

Chiara Boldrini is a Senior Researcher at IIT-CNR and head of the AI & Data Science lab of the Ubiquitous Internet research unit. Her research interests are in human-centric decentralized AI, causal learning in pervasive systems,



behavioral/cognitive models for the analysis and design of online social networks/Metaverse. She is the IIT-CNR co-PI for the National Extended Partnership in Artificial Intelligence (FAIR) and for the PNRR ICSC project, and she was involved in several EC projects since FP7. She currently holds the position of Editor-in-Chief for Special Issues at Elsevier Computer Communications. She is serving as General Chair of IEEE PerCom'26 (A\* CORE Ranking) and, over the years, has been on the organizing committee of several IEEE and ACM conferences/workshops, including IEEE PerCom and ACM MobiHoc. Recently, she has served in the TPC of AAAI ICWSM (as senior PC member), The Web Conference, ECML-PKDD, WSDM, and MobiHoc, among several others.