

# IEEE Distinguished Lecture

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**Title: Communications meet Machine Learning for Industry 5.0**

**June 20, 2024: 3:00 pm @ University of Cambridge, UK**

**Abstract:** The Internet of Things (IoT) is creating a new structure of awareness – a cybernetic one – upon physical processes. Industries of different kinds are expected to join soon this revolution, leading to the so- called Factories of the Future, also called Industry 5.0. As a first problem in the above space, we consider millimetre Wave technology to provide reliable wireless network service within factories where links may experience rapid and temporary fluctuations of the received signal power due to dynamic blockers, such as humans and robots, moving in the environment. We propose a novel beam recovery procedure that erases the delay introduced by current 5G New Radio procedures when switching to an alternative serving base station and beam, and then re-establish the primary connection after the blocker has moved away. We also address the issue of reliability in the Industrial IoT in case of missing sensors measurements due to network or hardware problems. We propose to support the fault detection and classification modules, which are the two critical components of a monitoring system for the Industrial Internet of Things, with a generative model. The latter is responsible for imputing missing sensor measurements so that the monitoring system performance is robust to missing data.

**Registration:** <https://events.vtools.ieee.org/event/register/421230>

**Venue:** Cambridge Graphene Centre (CGC) seminar room, The University of Cambridge, 9 JJ Thomson Avenue, Cambridge CB3 0FA, United Kingdom

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