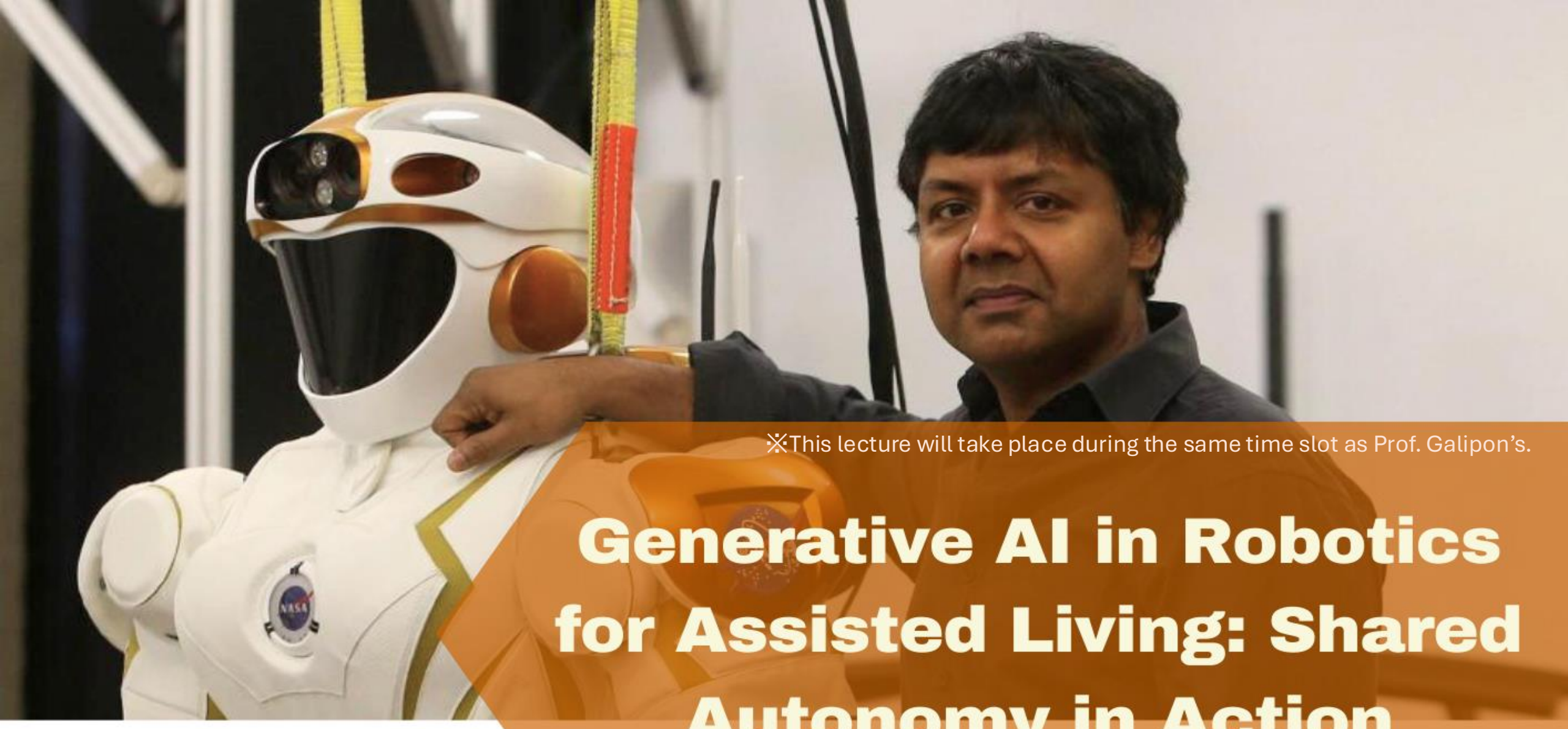

※This lecture will take place during the same time slot as Prof. Galipon's.

Generative AI in Robotics for Assisted Living: Shared Autonomy in Action

OCT 28, 2024 2:30-5:30 PM
LECTURE ROOM 2, BASIC MEDICAL RESEARCH BUILDING 3F

ABSTRACT

The use of AI and Robotics in our society is becoming ubiquitous and inevitable across various walks of life. The newgeneration of robots work much more closely with humans, other robots and interact significantly with the environment around it. As a result, the key paradigms are shifting from isolated decision-makingsystems to one that involves shared control -- with significant autonomy devolved to the robot platform; and end-users in the loop making only high-level decisions. This talk will introduce powerful machine learning technologiesranging from robust multi-modal sensing, shared representations, scalable real-time learning and adaptation, and compliant actuation that are enabling us to reap the benefits of increased autonomy while still feeling securely in control – with focus on latest algorithmic and hardware developments. This also raises some fundamental questions: while the robots are ready to share control, what is the optimal trade-off between autonomy and control that we are comfortable with? Domains where this debate is relevant include deployment of robots in surgical interventions, extreme environments, self-driving cars, asset inspection, repair & maintenance, factories of the future andassisted living technologies including exoskeletons and prosthetics to list a few.

SETHU VIJAYAKUMAR

is the Professor of Robotics at the University of Edinburgh, UK, and the Founding Director of the Edinburgh Centre for Robotics. He has pioneered the use of large-scale machine learning techniques in the real-time control of several iconic robotic platforms such as the SARCOS and the HONDA ASIMO humanoids, KUKA-LWR robot arm and iLIMB prosthetic hand. One of his projects (2016) involved a collaboration with NASA Johnson Space Centre on the Valkyrie humanoid robot being prepared for unmanned robotic pre-deployment missions to Mars. Professor Vijayakumar, who has a PhD from the Tokyo Institute of Technology, holds the Royal Academy of Engineering (RAEng) - Microsoft Research Chair at Edinburgh.

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