SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING
Website: https://cde.nus.edu.sg/ece

Area: Communications and Networks (CN)

Host: Prof Zhang Rui

Co-Sponsor: IEEE Communications Society Singapore Chapter

TOPIC	:	**Revolutionizing Wireless Connectivity for Industry 4.0**
SPEAKER	:	**Dr. Jisung Oh** **CEO & President at PHYTunes Inc. (California, USA)**
DATE	:	**Wednesday, 1 April 2026**
TIME	:	**10:30AM-11:30AM**
VENUE	:	**E3-06-07 (NUS Engineering Block 3, Level 6, Room 07)**

ABSTRACT

Headquartered in Palo Alto, California, **PHYTunes Inc.** is a deep-tech innovator dedicated to solving the "indoor wireless connectivity challenge." While 5G and Wi-Fi 7 offer unprecedented speeds, their high-frequency signals often struggle to penetrate the physical barriers of modern urban environments. PHYTunes enables a "**Network Without Limits"** by converging wireless and wireline technologies to deliver mission-critical connectivity especially for physical AI and industry automation.

PHYTunes flagship product suite replaces traditional, high-latency mesh networks with a **Single Frequency Network (SFN)** architecture by utilizing the **Physically Converged Wireless-Wireline Technology** invented by the founders. It features seamless roaming for robots moving through a facility with **zero roaming latency** and no handoff disconnections. As Singapore leads the way in **Industry 4.0**, PHYTunes provides the essential connectivity layer for **Physical AI**—the integration of AI with physical systems like robotics and autonomous vehicles, empowering robotics and automation.

Traditional Wi-Fi often fails in large-scale warehouses or smart factories due to roaming "dead zones" and signal interference. PHYTunes solves this by providing 1) **Ultra-Low Latency** critical for real-time coordination between swarms of robots and shared Edge AI resources, 2) **Deterministic Reliability e**liminating the "handoff" drops that cause safety stops in autonomous mobile robots (AMRs), and 3) **Enhanced Security** by containing signals within wirelines for the majority of the distance, reducing the RF "leaks" that are vulnerable to external hacking.

In alignment with active deployment of **Physical AI** in **Industry 4.0**, PHYTunes provides the essential connectivity layer for **Physical AI**—the integration of AI with physical systems like robotics and autonomous vehicles.

To further explore these advancements, we will introduce this novel wireless network architecture in detail. This seminar will cover the technical implementation of the centralized head-end unit and distributed RF nodes, specifically highlighting the benefits of constructing an uninterrupted wireless network for Physical AI. This seminar will demonstrate how PHYTunes overcomes the limitations of traditional Wi-Fi in large-scale warehouses and smart factories.

BIOGRAPHY

Dr. Jisung Oh is the CEO, cofounder and Board Member of PHYTunes. He started his career at Samsung Electronics as a Communications Systems Engineer and worked in multiple business divisions including digital TV, mobile handset, and telecommunication networks. He led mmWave core technology development for 5G cellular network as vice president of engineering and contributed to the launch of Verizon's 5G Home Internet using mmWave technology. He moved to the US in 2018 and joined ASSIA as vice president of wireless development in charge of cloud-based wireless network management. In December 2020, he co-founded PHYTunes with his Ph.D. advisor, Prof. John Cioffi, and his colleagues from ASSIA and is introducing a wireless-wireline convergence technology that solves the indoor penetration problem of 5G and Wi-Fi. He received B.S. and M.S. degrees in control and instrumentation engineering from Seoul National University and a Ph.D. degree in electrical engineering from Stanford University.