244th WPI-IIIS Seminar

Smarter Sleep with Math, AI, and Wearables

This talk presents how mathematics, artificial intelligence, and wearable technology are transforming the diagnosis and treatment of sleep and circadian rhythm disorders. By modeling cellular “traffic jams” that disrupt body clocks in conditions like Alzheimer’s, obesity, and aging, we uncover new therapeutic insights. Collaborating with Samsung Medical Center, we analyze sleep patterns of shift workers and patients with mood disorders using wearable data and machine learning. These findings enable personalized sleep-wake schedules and power a mobile app that improves sleep quality, reduces daytime fatigue, and enhances mental health.

Dr. Jae Kyoung Kim

Department of Mathematical Science, KAIST

Date: **Thursday, December 18, 2025**

Time: **12:00 – 13:00**

Venue: **1F Auditorium, IIIS Building**

＊On-site participation only

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