

Prof. Kenneth LOH, University of California San Diego

TaylorMade Golf Chancellor’s Endowed Professor, Department of Structural Engineering
Active, Responsive, Multifunctional, and Ordered-materials Research (ARMOR) Laboratory

Date: Thursday, 06.02.2025 **(time)** 10:15-12:00 (2 x 45 min with 15 min break)
Location: HSi10 (PZ401028), Inffeldgasse 23, 1 Stock.
Title: “Distributed Sensing Methods for Structural and Human Health Monitoring”

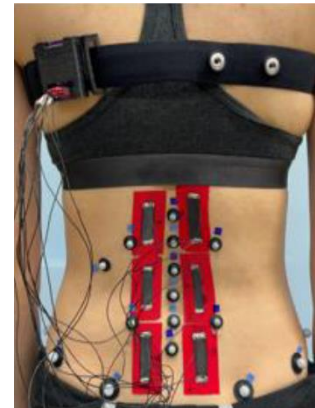
Abstract:

In the first part of the seminar, structural health monitoring (SHM) and nondestructive evaluation (NDE) methods aiming to prevent catastrophic structural failure by the timely



identification of critical damage are presented. SHM and NDE seek to translate data to actionable information to decisions. Specifically, this can be achieved by acquiring relevant structural response sensing streams, which are then analyzed through a cybermodel or Digital Twin to assess current performance and to predict future structural behavior. The novel sensor technologies developed by Prof. Loh and his team include, among others, carbon nanotube sensing skins for electric impedance tomography.

The second objective of this seminar is to discuss the development of an individualized Human Digital Twin that uses machine learning algorithms to process novel wearable sensor data for identifying movement deficiencies and providing specific feedback that can result in improved human performance. However, relevant sensing data that describes how people perform specific movements are needed. To fill this technology gap, a self-adhesive, elastic fabric, nanocomposite skin-strain sensor has been developed, tested in controlled laboratory environments, and validated through human subject studies.



Short Bio

Dr. Ken Loh is the TaylorMade Golf Chancellor’s Endowed Professor in the Department of Structural Engineering at UC San Diego and previously served as the Department Vice Chair (2018-2021). He is the Director of the Active, Responsive, Multifunctional, and Ordered-materials Research (ARMOR) Lab and is the Director of the Jacobs School of Engineering, Center for Extreme Events Research (CEER). He is also an affiliate faculty member of the Materials Science & Engineering Program. Dr. Loh received his B.S. in Civil Engineering from Johns Hopkins University in 2004. His graduate studies were at the University of Michigan, where he completed two M.S. degrees in Structural Engineering (2005) and Materials Science & Engineering (2008), as well as a Ph.D. in Structural Engineering in 2008. In addition to his academic career, Dr. Loh is an Engineering Duty Officer in the U.S. Navy Reserve and a co-founder of a start-up company, JAK Labs, Inc.

