

School of Civil and Environmental Engineering
Structures and Applied Mechanics Seminar Series

Present

Fall and Gait Analysis Through Floor Vibrations

Speaker:

Juan M. Caicedo, Ph.D.

**Professor and Chair, Department of Civil and Environmental Engineering
University of South Carolina**

This seminar discusses the use of floor vibrations to estimate occupants' gait parameters. The presentation explores how passive structures are transformed into intelligent systems with the potential to provide healthcare systems actionable insights for elderly care, such as changes in activity related to health outcomes. The presentation covers the sensors used, the probabilistic analytical techniques developed to both identify falls and estimate walking speed and cadence. Results from lab experiments are presented, showing excellent agreement between gait parameters from wearable devices and those estimated using floor vibrations. The presentation concludes with a discussion on the challenges and opportunities to transform passive civil systems into active intelligent infrastructure.

Friday, November 22, 2024

12:20 – 1:10 PM

CAST 204

Bio: Dr. Juan M. Caicedo is a Professor and the Chair of the Department of Civil and Environmental Engineering at the University of South Carolina. His work explores making structures “smarter” through the discovery of new knowledge in structural dynamics, uncertainty quantification, and model updating. Dr. Caicedo's research has been funded by NIH, the NSF, and the SCDOT among others. As an educator, Dr. Caicedo has taught and developed undergraduate and graduate courses as well as led several NSF funded projects in engineering education. Dr. Caicedo's research and teaching have been recognized with multiple awards such as the University of South Carolina's Garnet Apple Award for Teaching Innovation, the ASCE South East section Teacher of the Year, and the NSF CAREER award.