

DEPARTMENT OF BIOMEDICAL ENGINEERING

## 2026 Spring Seminar

**Juan David Romero Ante, PhD.**

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University of Connecticut

**Friday, February 13, 2026**

**10:45am – 11:45am**

**PWEB 150**

### ABSTRACT:

Peripheral arterial disease (PAD) and peripheral neuropathy (PN) are pathologies that affect the peripheral cardiovascular system, with a significant impact on patients' quality of life and an increased risk of severe complications. In this context, the development of objective and non-invasive tools for clinical diagnosis and follow-up is particularly relevant. This talk will present the main outcomes of research focused on the design, development, and validation of electronic systems aimed at supporting the diagnosis of patients with PAD and PN. Specifically, a system for estimating the Ankle-Brachial Index based on electrocardiography and photoplethysmography signals will be described, with the goal of improving PAD detection procedures. In addition, the development of an electrodermal activity measurement system for monitoring sudomotor function in patients with PN will be addressed, including an analysis of the use of full wave alternating current excitation signals and their advantages in terms of signal stability and quality.

### BIOGRAPHY:

Juan David Romero Ante was born in Popayán, Colombia. He graduated with a degree in Industrial Automation Engineering from the University of Cauca in 2019. In September 2019, he began validating his qualifications on the Electronics and Industrial Automation Engineering program at Miguel Hernández University (UMH) in Spain, receiving an MSc in Industrial Engineering in 2022. In September 2025, he completed his PhD in Bioengineering at UMH, focusing on developing electronic systems and portable devices for diagnosing and evaluating patients with peripheral cardiovascular system pathologies.



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