

Electrical Engineering and Computer Science Technical Seminar Series

Friday, September 20th, 2019
12:00 PM in COB 263

Scale- and Context-aware Convolutional Neural Networks for Non-Intrusive Load Monitoring

Yu Zhang

Faculty Host: Wan Du

Abstract

Non-intrusive load monitoring (NILM) refers to the challenging task of disaggregating the power consumption of a household into appliance-level electricity usages. By detecting load malfunction and recommending energy reduction programs, cost-effective NILM provides intelligent demand side management for both utility companies and end users. In this talk, we will introduce a novel neural network architecture for NILM named scale- and context-aware network (SCANet), which exploits multi-scale features and contextual information. Specifically, we develop a multi-branch architecture with multiple receptive field sizes and branch-wise gating. A self-attention module is built to facilitate the integration of global context. Extensive numerical tests on open datasets show that the proposed SCANet significantly outperforms state-of-the-art methods. We will also demonstrate the working mechanisms of the modules by visualizing the network's intermediate layers.

For additional information contact Prof. Wan Du <wdu3@ucmerced.edu>

soegrads@ucmerced.edu

Yu Zhang

**Department of Electrical
and Computer
Engineering,
UC Santa Cruz**

Biography

Yu Zhang is an Assistant Professor in the ECE Department of UC Santa Cruz (UCSC). Prior to joining UCSC, he was a postdoc at UC Berkeley and Lawrence Berkeley National Laboratory. Dr. Zhang received his Ph.D. degree in Electrical Engineering from the University of Minnesota in 2015. His research interests span the broad areas of smart power grids, signal processing, optimization, and machine learning. He was the recipient of the Hellman Fellowship in 2019.

