Michael Zeifman
Principal Research Scientist, Fraunhofer USA Center for Manufacturing Innovation

February 22
1:30 – 2:30 pm ET

Presentation
ZOOM LINK

Student Meeting- 2:30-3:30 pm
ZOOM LINK

Remote Home Energy Performance Assessment

ABSTRACT: One of the goals of the 2030 Challenge, adopted by The American Institute of Architects and the U.S. Green Building Council, is renovation of existing building stock to achieve 50% reduction in fossil fuel use. This goal translates into about 1.5 million major retrofits (i.e., insulation, air sealing and/or heating system upgrades) of existing homes per year. Identification of the retrofit opportunities in existing homes at scale is required to achieve this goal, yet the current identification practice involves on-site home energy assessments that can be inconvenient to homeowners, expensive, and of variable accuracy. In this talk, we will discuss remote home energy assessment technologies powered by data from ubiquitous sensors - communicating thermostats. We use coarse-grained physics-based modeling to estimate physical building parameters corresponding to the target retrofit opportunities, i.e., whole-home R value and ACH50, and to predict the post-retrofit energy savings. Comparisons of these estimates with results of on-site home energy assessments will be shown. The developed method is scalable and can be automatically applied to numerous households to identify home improvement opportunities.

BIOGRAPHY: Michael Zeifman is a Principal Research Scientist at the Fraunhofer USA Center for Manufacturing Innovation. Michael is an R&D specialist with more than 20 years of experience in modeling, simulation, machine learning, and data analytics as applied to a broad range of subjects. He has been a PI/co-PI on numerous R&D projects funded by government and/or industry, including recent DOE awards to develop enabling technologies for remote characterization of home retrofit opportunities using communicating thermostat data and for prediction of residential electrical loads and their flexibility using disaggregated electric data. He has served as an Executive/Technical Program Committee member on several IEEE conferences, as an NSF Panel Reviewer and as a reviewer for numerous archival journals. He authored about 80 scientific and technical papers. Michael received his undergraduate degree in Engineering Physics from Peter the Great St. Petersburg Polytechnic University, Russia, and his M.Sc. and Ph.D. degrees in Industrial Engineering from Technicon, Israel. Michael is a Senior Member of both IEEE and AIAA.