CASE SCHOOL OF ENGINEERING
CASE WESTERN RESERVE UNIVERSITY

Department of Civil and Environmental Engineering
Case Western Reserve University
Bingham Bldg. Room 233
10900 Euclid Ave
Cleveland, OH 44106

Civil and Environmental Engineering Department Seminar

DR. WEIHONG GUO

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Date: Friday Oct 28, 2022, 12:45 – 2:00 PM
Location: Bingham Bldg., Room 140

Lunch discussion will start at 12:00PM in Vose Room, #138

Remote Access:
Meeting ID: 925 0263 5986 **Passcode**: 151477
https://cwru.zoom.us/j/92502635986?pwd=dkZEMWVocGZWL0UvQlJudlM4bHl5Zz09

Image Segmentation using Variational Methods

Abstract. Image segmentation is a computer vision problem that divides an image into different regions based on the characteristics of pixels to separate objects or to identify the boundaries of objects of interest. It is usually a key step to simplify an image for efficient data analysis in various areas such as engineering and medicine. In medical imaging for instance, image segmentation identifies tutors and other pathologies which help plan for surgery and evaluate the effectiveness of treatments. Image segmentation becomes a difficult task when there are missing boundaries, confusing structures, partial volume effects, poor contrast along the boundaries and/or complex density distribution. Deep learning methods have limited performance when there is no large training data available. Deep learning methods also cause overfitting sometimes. This talk focuses on some recent work on variational methods for image segmentation. They are all un-supervised and don't require training data. The results are based on collaborations with Dr. Xiaojuan Li (CCF), Ke Chen (Liverpool University) and Francesco Torella (Royal Liverpool and Broadgreen University Hospitals), Thomas Atta-Fasou (former PhD student, now at Intel) and Jun Liu (Beijing Normal University).

Speaker Bio: Dr. Weihong Guo is a Professor and chair of the department of Mathematics, Applied Mathematics and Statistics. She received the Ph.D. degree in Applied Math from University of Florida (USA) in 2007. She also received a Master's degree in Statistics from the same university the same year. Her research interests include inverse problems, imaging, computer vision and scientific computing.