

COLLOQUIUM
CENTER FOR APPLIED MATHEMATICS AND SCIENCE
DEPARTMENT OF MATHEMATICS
UNIVERSITY OF WEST GEORGIA

11:00 AM, THURSDAY, APRIL 25th, 2019, VENUE: BOYD 306

Speaker: **Dr. Anthony Joseph Yezzi, Julian T. Hightower Chair Professor, School of Electrical and Computer Engineering, Georgia Tech**

Title: **Images and Curves in Motion (a.k.a. Partial Differential Equations!)**

Abstract: In this talk we explore the hands-on, practical use of partial differential equations (PDE's) to achieve complex tasks in image analysis. We start with the classic linear heat equation, which models (macroscopically) the time evolution of temperature values across a heated object cooling naturally according to the laws of thermodynamics. We demonstrate how this same equation can be used to remove noise from corrupted images and how more sophisticated versions of this PDE can do the same job while preserving important edge features in the image at the same time. We move on to show how time evolution PDE's can be applied to curves, both for the sake of smoothing curves as well as for detecting object boundaries in images (demos for applications in visual tracking will be included as well). Finally, we jump to 3D, and consider similar applications for surfaces, ranging from medical image analysis, 3D reconstruction of objects from images, and even computer vision based methods for automotive wheel alignment! The talk will be structured heavily around several real-time computer demos.

All are welcome.