Old Dominion University
College of Engineering and Technology
Department of Electrical and Computer Engineering

All lectures to be held at 3:00 p.m. on Tuesdays in Kaufman 224. For more information, contact Dr. Dimitrie Popescu at (757) 683-3741 or e-mail dpopescu@odu.edu. Refreshments provided after the seminar.

Tuesday, November 8, 2016 Seminar Topic:

CODING AUTONOMOUS SYSTEMS: IMPLEMENTING AUTONOMY IN THE AUTONOMY INCUBATOR
by
Dr. Loc Tran, Computer Engineering,
NASA Langley Research Center

Abstract:

I present the software approach of implementing autonomy on small UAVs from my work in the Autonomy Incubator while perusing a package drop-off and retrieval capability using small unmanned aerial vehicles. To achieve our mission, a multitude of algorithms needed to be implemented and run on small single board computers that a small aerial vehicle can fly. I present our solution for distributed computing over multiple single board computers and data transfer between software nodes running on separate machines. I also go in-depth on the software nodes that perform object detection, image classification, and precision landing using computer vision on a downward facing camera.

Bio:

Loc Tran is a computer engineer at NASA Langley Research Center in the Flight Software Systems branch. He is the principle investigator for machine learning at the Autonomy Incubator in NASA Langley. He has completed his Ph.D. in Electrical and Computer Engineering at Old Dominion University in August 2014. His doctoral research work focused on nonlinear reduction of high-dimensional data sets and nonlinear manifold learning. During his graduate studies at ODU, Loc was a part of the university's computer vision laboratory and worked on face recognition, license plate detection and recognition, and MRI analysis. His current research interests include small UAS autonomous obstacle avoidance, convolutional neural networks, and visual self-localization and mapping.