

## CS Masters' Thesis Defense

**Title:** *Vision Based Robotic Person Following Using an Improved Image Segmentation Approach*  
**Speaker:** Brian Blaine  
**Date:** Friday, April 20, 2012  
**Time:** 2:00 p.m.  
**Location:** GMCS 555  
**Thesis advisor:** Dr Mahmoud Tarokh

### **Abstract:**

In image based robotic person following a robot attempts to autonomously follow a person based on visual characteristics of the person in an image. The robot's vision system must be able to detect and distinguish the person in a changing environment. Furthermore, the robot's control system must be able to properly follow the path of the person given the location found by the vision system. To distinguish a person from the environment region segmentation is performed on images acquired during person following to detect regions that may represent the person being followed. Regions are found based on their similarity in color to a training model of the person. The regions that are found are then considered for tracking the location and distance to the person for following. The detected regions may represent the entire person, parts of the person, or other objects in the scene. To perform person following well this system depends on evaluating the detected regions correctly to track the location and distance to the person to use for following. The approach presented in this thesis will consider all the regions detected to formulate a location and distance used for person following. The characteristics of each region with respect to the training region are evaluated and regions where the color closely matches the training region and have a larger size make a greater contribution to location and distance values. Performance of this approach is then compared to previous approaches used for person following on this project.