



# Computer Science Seminar



## Supporting Large-Scale Ethnography with Automated Human Activity Analysis

**Richard Souvenir**  
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**Tuesday, May 5, 2015 at 12:30 pm**  
**Room: Computer Science 209**

**Abstract** - Current approaches to evaluating designed spaces are limited by the time and expense of manual observation. In collaboration with architects and ethnographers, we are developing a system for sensing, storing, and analyzing human activity data over long time scales using a network of indoor cameras. The system relies on automated methods for people tracking and action recognition. In this talk, I will describe the overall project and solutions to two challenges that we encountered.

First, I will describe our algorithm for human action recognition in multi-camera networks, which is a hybrid between (efficient) single-camera approaches and (accurate) multi-view methods. This method is motivated by the observation that not all viewpoints in a multi-camera network are equal for recognizing actions and introduces dynamic viewpoint selection to improve processing time without sacrificing accuracy. Second, I will discuss the problem of label correction for large-scale image sets used for learning-based algorithms, including coarse-grained action recognition and fine-grained head pose estimation from video. Labels for certain large-scale data sets are collected by crowdsourcing or co-located sensors, and, in some cases, highly corrupted. I will describe our method for denoising ordered labels from natural image sets, which can be viewed as an algorithm for robust regression in the high-dimensional domain of images.

**Brief Bio** – Richard Souvenir is an Associate Professor in the Department of Computer Science at The University of North Carolina at Charlotte and directs the Video and Image Analysis Lab. His research interests lie in understanding natural video without developing highly constrained models to improve computer vision tasks, such as segmentation, recognition, and tracking in various domains, including biomedical imaging and human motion analysis. Dr. Souvenir received his D.Sc. from Washington University in St. Louis in 2006.