**ECE 8527: Introduction to  
Machine Learning and Pattern Recognition**

# HW No. 12: Statistical Significance

You conduct a set of machine learning experiments in which you measure performance on a data set of 1,000 files (N = 1,000). The baseline system gives an error rate of 20.0%.

1. Your new system delivers an error rate of 19.0%. Is it statistically significant at a confidence level of 80%? Explain.
2. What is the minimum decrease in error rate that will be statistically significant?
3. Repeat (1) and (2) for N = 100, 500, 2000, 5000 and 10,000, for confidence levels of 85%, 90% and 95%.

Present your results in a single, nicely formatted table. Explain their significance.