

**School of Computer Science
M.S. Thesis Defense**

**By
Zack Tidwell**

**Expert Move Prediction for Computer Go using Spatial
Probability Trees**

ABSTRACT

We introduce Spatial Probability Trees (SPTs), which provide a method of learning spatial probability distributions using a decision-tree type of structure. SPTs split the data using statistics calculated with respect to a single point in space and produce a local probability distribution centered on this point. By aggregating these regional probabilities across the entire space, SPTs can be used to generate global probability density functions. We apply SPTs to computer Go to predict expert moves, and show that this predictive power can be used to significantly improve the playing strength of state-of-the-art computer Go players that utilize Upper Confidence Bounds for Trees. In addition, we can perfectly predict the best expert move 35% of the time.

Date: Monday, November 21, 2011

Time: 9:30 a.m. – 11:30 p.m.

Place: SRTC boardroom

**Committee members: Dr. Amy McGovern – Chair
Dr. Andrew Fagg
Dr. Dean Hougen**

Reading Copy available in Computer Science Graduate Assistant's office DEH 105

For accommodations on the basis of disability, please call 325-4042.