

INVITED SPEAKERS AND PAPERS

Artificial Prediction Markets for Lymph Node Detection

Assoc. Prof. Adrian Barbu

Prediction markets are forums aimed at predicting the outcome of future events of interest such as election results. People participate in a prediction market by buying contracts on the possible outcomes. They are rewarded after the outcome is known based on the number of contracts purchased for the correct outcome. The Artificial Prediction Market is a novel machine learning method that simulates a prediction market where the participants are trained classifiers instead of people. In this work we present an application of the Artificial Prediction Market to lymph node detection from CT images. An evaluation on 54 CT volumes shows that the detector trained with the Artificial Prediction Market has a detection rate of 81.2% at 3 false positives per volume, while an Adaboost classifier trained on the same features obtains a detection rate of 79.6% at the same false positive rate.

Adrian Barbu received his BS degree from University of Bucharest, Romania, in 1995, a Ph.D. in Mathematics from Ohio State University in 2000 and a Ph.D. in Computer Science from University of California Los Angeles in 2005. From 2005 to 2007 he was a research scientist and later project manager in Siemens Corporate Research, working in medical imaging. He received the 2011 Thomas A. Edison Patent Award with his co-authors for their work on Marginal Space Learning. Since 2007 he joined the Statistics department at Florida State University as an assistant professor, where he was recently promoted to associate professor. His research interests are in medical imaging, computer vision and machine learning.
