T. Ryan Hoens

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Objective

A challenging position utilizing my deep knowledge of data analytics and machine learning in order to build models to solve complex longitudinal problems in the areas of fraud detection, network intrusion prevention, risk assessment, etc.

Skill Summary

Machine learning, data mining, learning from highly imbalanced datasets, learning in non-stationary data streams, evaluation, privacy preserving data mining, cryptography/security

Education

University of Notre Dame, Notre Dame, IN 8/2008–present

- **Doctor of Philosophy**, Computer Science (GPA, 3.9)
  - Thesis title: Living in an Imbalanced World

Rochester Institute of Technology, Rochester, NY 9/2003–8/2008

- **Master of Science**, Computer Science (GPA, 4.0)
- **Bachelor of Science**, Computer Science (GPA, 3.7)

Professional Experience

University of Notre Dame, Notre Dame, IN

- **Research Assistant** 8/2008–present
  - Created enhancements for algorithms for imbalanced data, with an emphasis on the two class problem.
  - Developed a novel framework for learning in data streams which exhibit concept drift and class imbalance.
  - Designed two architectures to compute secure and private functions over social networks.
- **Teaching Assistant** 2010–2011
  - Data Mining, and Linear Programming.

National Security Agency, Fort Meade, MD

- **Computer Science Coop** 3/2006–8/2006, 11/2006–6/2007
  - Devised an algorithm to increase network throughput in asynchronous network communications. Presented research results (including white paper) to department research scientists.
  - Researched an algorithm for determining user identity based on typing characteristics.
  - Technical government project lead from inception to development through deployment of a highly classified QRC (Quick Reaction Capability) system.
  - Created and coordinated QRC systems for deployment; provided training and field support.

Awards

Notebaert Premier Fellowship recipient (6 years), University of Notre Dame Graduate School. '08
Awarded RIT full graduate scholarship from the Department of Computer Science. '07
Awarded performance bonus from NSA for development and deployment of the QRC system. '06
Maintained a Top Secret (TS)//Sensitive Compartmented Information (SCI) clearance. '06–'08

Selected Publications

T. Ryan Hoens, Qi Qian, Nitesh V. Chawla, and Zhi-Hua Zhou. Building decision trees for the multi-class imbalance problem. In *PAKDD*. IEEE, Under Review.

T. Ryan Hoens, Robi Polikar, and Nitesh V. Chawla. Learning from streaming data with concept drift and imbalance: An overview. *Progress in Artificial Intelligence*, Springer, To Appear.

T. Ryan Hoens, Robi Polikar, and Nitesh V. Chawla. Heuristic updatable weighted random subspaces for nonstationary environments. In *ICDM*. IEEE, 2011.

David Cieslak, T. Ryan Hoens, Nitesh V. Chawla, and W. Philip Kegelmeyer. Hellinger distance decision trees are robust and skew-insensitive. *DMKD*, pages 1–23, 2011.

Troy Raeder, T. Ryan Hoens, and Nitesh V. Chawla. Consequences of variability in classifier performance estimates. In *ICDM*, pages 421–430. IEEE, 2010.

T. Ryan Hoens and Nitesh V. Chawla. Generating diverse ensembles to counter the problem of class imbalance. In *PAKDD*, pages 488–499. Springer, 2010.

Tools

Ruby, Java, C, C++, High Performance Computing, LaTeX, bash, Eclipse, Matlab, WEKA, MOA

Reviewer

- Pattern Recognition Letters
- IEEE International Conference on Data Mining; Transactions on Knowledge and Data Engineering; Transactions on Neural Networks; and Transactions on Systems, Man, and Cybernetics Part B
- Statistical Analysis and Data Mining

Miscellaneous

- US Citizen
- Interests include: hockey, baseball, soccer, reading, German, Swedish, and computer/network security.