Trevor Richardson

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PROFESSIONAL INTERESTS

Machine learning, feature learning, sequential data modeling, reinforcement learning and predictive modeling using supervised, semi-supervised and unsupervised methods in the areas of computer vision, cognitive and brain sciences, robotics, natural language processing and automation

EDUCATION

MASTER OF SCIENCE | Computer Science | Summer 2018
College of Computing, Informatics, and Decision Systems Engineering
Arizona State University
GPA 3.94
Interactive Robotics Lab | Advisor: Dr. Heni Ben Amor

BACHELOR OF SCIENCE | Industrial Engineering | May 2014
Barrett, the Honors College
Arizona State University
GPA 3.78

PUBLICATIONS

T. Richardson, I. Sur, H. Ben Amor. "'Should Robots Feel Pain?' – Towards a Computational Theory of Pain in Autonomous Systems." Presented at the *International Symposium On Robotics Research*, December 2017.

ACADEMIC WORK

RESEARCH ASSISTANT
Arizona State University | Interactive Robotics Lab

- Researched and developed machine learning pain-inspired robotic algorithms and systems that have the ability to detect, predict and avoid future noxious states to promote safe exploration by autonomous robots.
- Performed comprehensive literature reviews and developed solutions using state of the art deep learning techniques such as: spatio-temporal feature learning with Convolutional LSTM; deep reinforcement learning using policy gradient methods; and uncertainty analysis through the use of Monte Carlo dropout.
- Developed robot learning teaching materials for Intel Corporation. Designed robot arm interactive simulation to highlight the capability of various data-driven machine learning techniques such as imitation learning, principle component analysis and predictive modeling using deep neural networks. Created slide deck for Intel Corporation to describe the theoretical aspects of various machine learning techniques.

ACADEMIC SERVICE
Reviewer for International Symposium on Robotics Research, 2017

TEACHING ASSISTANT
Arizona State University | School of Computing, Informatics, and Decision Systems Engineering

- Teaching assistant | Engineering Economic Analysis | Summer 2013
- Teaching assistant | Deductive Logic, Leadership | Spring 2014

EMPLOYMENT HISTORY

ROCHESTER DATA SCIENCE CONSORTIUM | November 2018 - Current
Rochester, NY
Data Scientist

- Solve and research problems in the domain of perception, robotics, machine learning, data science and optimization theory
- Provide innovative, scalable and viable solutions involving image and video data acquisition and processing, as well as multimodal data processing and sensor fusion

GENERAL MOTORS | Enterprise Data Warehouse | Summer 2016
Detroit, MI
Computer Science Intern

- Developed shell scripts that performed data quality analyses using Hadoop for GM's Enterprise Data Warehousing (EDW) Business Data Architect Team
- Performed sourcing analysis and documented metadata
- Conveyed results through actionable business intelligence reports with Tableau

PALO ALTO RESEARCH CENTER | Intelligent Systems Lab | Summer 2014
Palo Alto, CA
Engineering Research Intern

- Researched the relationship between end-milling tool type, material type and feed speed in order to assist in predicting machining econometrics
- Identified actionable end-milling machining tasks and requirements in order to model assumptions of the end-milling process
- Facilitated communications between machinists and computer scientists in artificial intelligence lab

CISCO SYSTEMS | Summer 2013
San Jose, CA
Engineering Intern

- Designed a scalable supply chain rebate process to recapture lost revenue
- Analyzed circuit boards used in servers, proposing cost-saving measures

AWARDS

DOCTORAL CONSORTIUM TRAVEL GRANT | International Symposium On Robotics Research | December 2017
GRADUATED MAGNA CUM LAUDE | Barrett, The Honors College | Spring 2014
PRESIDENT'S SCHOLARSHIP | Arizona State University | Fall 2010 - Spring 2014

SKILLS

COMPUTER SCIENCE
PyTorch | Tensorflow | Scipy | Python | Numpy | OpenCV | Deep Neural Networks | Reinforcement Learning | Computer Vision | Supervised Learning | Clustering | Statistical Machine Learning | Linear Regression | Sampling | Normalization | SVM | Algorithm Design | C | C++ | Linux | Git | Java | SQL

INDUSTRIAL ENGINEERING
Lean Green Belt | Six Sigma | Operations Research | DMAIC | Production Control | Statistical Modeling