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Chris Birmingham

Education

University of Southern California, Los Angeles, California
Computer Science, Ph.D. Aug 2018 - Present

- Concentration in Socially Assistive Robotics
  - Studying Multi-Party Human-Robot Interaction (HRI) in a support group context
  - Developing algorithms and deep learning models for understanding group dynamics
  - Mentoring a team of 15 Undergraduate and Master's students
- Graduate Research Assistant in Dr. Maja Mataric's Interaction Lab
  - Developed an open-source framework for composable human-robot interaction
  - Student Co-Chair of IROS 2020 Tutorial
  - Reviewer for Transactions on HRI

University of Bristol, Bristol, United Kingdom
Robots and Autonomous Systems, MRes May 2018

- Explored user experiences introducing assistive robots to the home with Dr. Caleb-Solly
- Combined deep learning depth estimation and RGBD SLAM algorithms for relocalization for Master's Thesis with Dr. Andrew Calway
- Funded through the Marshall Scholarship

Gonzaga University, *BS, Electrical Engineering (Honors) MCL; CS Minor* May 2015

Relevant Coursework

- (Graduate Courses) NLP; AI for Social Good; Analysis of Algorithms; Computational HRI; Learning in Autonomous Systems; Bio Inspired AI; Image Processing and CV; Robotic Systems

Relevant Skills

Technical Skills

- Python, C++, Matlab, Tensorflow, PyTorch, ROS, Assembly, Git, Bash Scripting, Docker, Pandas
- Experience working with the Nao, PR2, PAL TIAGO, UR10, Arduino, and Raspberry Pi

Deep Learning/Machine Learning Skills

- Computer Vision, Natural Language Processing, Time Series Forecasting
- Supervised Learning, Deep Metric Learning, Probability and Statistics, Feature Engineering, Data Augmentation, Signal Processing

Non-Technical Skills

- Self-Starting; Team Leadership; Agile Scrum Project Management; IP Development
- Experimental Design; Literature Review; Competitive Analysis; Academic and Grant Writing; Public Speaking and Presenting; Mentoring

Work Experience

Slyce, Philadelphia PA Jan 2018-Aug 2018
Director of Research and Development

- Trained, and deployed attribute classification models to production servers
- Executed IP strategy including filing 4 patents (pending) and patent acquisitions
- Recruited and managed of a team of researchers

Anzu Partners, Washington DC Jan 2016-Aug 2016; Jan 2018-Present
VC Associate

- Conducted extensive diligence on over 200 prospective investments, focused primarily on companies related to robotics, automation, and AI
- Consulted on technical project support for investment portfolio, including starting an intern program and automating elements of the manufacturing line for a photonics startup

Other Experience

European Robotics League - Service Robots Competition, Bristol UK May 2017-Present
Team Member

- Developing service robot capabilities for the elderly and disabled populations on the PR2 Robot. Our team competed in the Barcelona and Edinburgh regional events.

University of Bristol Amazon Robotics Challenge, Bristol UK January 2017-May 2017
Team Leader

- Led a team of graduate students to complete the Amazon Robotics Challenge, picking a list of items off a shelf and placing them in a bin.

Georgia Tech SURE REU, Atlanta, GA May 2014-August 2014
Undergraduate Research Assistant

- Developed anomaly detection algorithms for safely feeding users with disabilities using the PR2 robot with Dr. Charlie Kemp

Papers and Presentations

Predicting Turn Taking in Multi-Party Human-Robot Interaction – Under Development for RSS 2020

- Introduce Temporal Convolutional Networks to the turn taking problem, will show improvement on the state of the art.

Can I Trust You? A User Study of Robot Mediation of a Support Group – ICRA 2020

- Ran a user study of a robot-mediated support group and introduced a novel framework for understanding interpersonal trust in the HRI context.
- Will be presented at the International Conference on Robotics and Automation May 2020

Visual Relocalization with RGB-D SLAM and Convolutional Neural Networks – Master's Thesis 2017

- Synthesized a CNN capable of producing pixel-wise depth estimations for single RGB images with an RGB-D SLAM algorithm and tested the accuracy of the system for the task of relocalizing new RGB images in a 3D model.
- Poster presented at Bristol Robotics Laboratory Research Symposium.

Human Cognition vs AI: A Developmental Comparison and the Moral Implications – B.S. Thesis 2015

- Correlated the history and trends of AI research and development with patterns of human development from infancy to young adulthood.
- Thesis on display in the Gonzaga Library. Presented to the Gonzaga and Spokane community.

Creating Common Sense: Feeding Yogurt Using the PR2 with Multi-Modal Anomaly Detection – 2014

- Created an anomaly detection algorithm to enable the PR2 robot to safely feed yogurt to a person with quadriplegia.