Joshua R. Bhagat Smith

PhD Student · Robotics & Artificial Intelligence

2000, 204 NW Monroe Ave Rogers Hall, Corvallis, OR 97331

bhagatsj@oregonstate.edu | jbs023.github.io

Education

Oregon State University *Corvallis, OR*

PhD Robotics and Artificial Intelligence *2020 - present*

- Advisor: Dr. Julie A. Adams
- Dissertation: "Adaptive Workload Estimation using Few-Shot Learning"

University of Arkansas *Fayetteville, AR*

MS Computer Science *2015 - 2017*

- Advisor: Dr. Michael Gashler
- Thesis: "An investigation of how neural networks learn from the experiences of peers through periodic weight averaging."

University of Arkansas *Fayetteville, AR*

BS Computer Engineering *2011 - 2015*

- Minors in Math, Physics

Professional Experience

2020-	**Graduate Research Assistant**, Collaborative Robotics and Intelligent Systems Inst., Human Machine Teaming Lab
2017-2020	**Senior Cloud Infrastructure Engineer**, HERE Technologies
2015-2017	**Graduate Teaching Assistant**, Computer Science and Computer Engineer Dept., University of Arkansas
2016	**Research Intern**, Dynamic Systems and Controls Branch, NASA Langley Research Center

Publications

Published

J. Bhagat Smith, P. Baskaran, J.A. Adams. "Decomposing Physical Workload Estimation for Human-Robot Teams" in *Proc. IEEE International Conference on Human-Machine Systems*, 2022.

P. Baskaran, , **J. Bhagat Smith**, J.A. Adams. "Visual Task Recognition for Human-Robot Teams" in *Proc. IEEE International Conference on Human-Machine Systems*, 2022.

A. Moore, M. Schubert, T. Fang, **J. Smith**, N. Rymer. "Lidar-derived navigational geofences for low altitude flight operations," in *Proc. AIAA AVIATION FORUM* Virtual Event. 2020.

A. Moore, M. Schubert, S. Balachandran, M. Consiglio, C. Munoz, **J. Smith**, D. Lewis, P. Schneide. "Inspection of electrical transmission structures with UAV path conformance and lidar-based geofences," in *Proc. of IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT)* Singapore. 2018.

J. Smith, M. Gashler. "An investigation of how neural networks learn from the experiences of peers through periodic weight averaging," in *Proc. IEEE International Conference on Machine Learning and Applications (ICMLA)* Cancun, Mexico. 2017.

In Submission

J. Bhagat Smith, P. Baskaran, J.A. Adams. "Influence of Honeybee Inspired Drifter Agents." PloS one, 2023.

In Preparation

J. Bhagat Smith, P. Baskaran, J.A. Adams. "Guard Agents and Their Impact on Collective Decision Making."

Teaching Experience

Spring 2017 **Artificial Intelligence**, Teaching Assistant
Fall 2016 **Programming Foundations I**, Teaching Assistant
Spring 2016 **Computer Organization**, Teaching Assistant
Fall 2015 **Programming Foundations I**, Teaching Assistant

Research Experience

Oregon State University - Robotics *Corvallis, OR*
Advisor: Dr. Julie A. Adams *Fall. 2020 - Present*

- Dissertation: "Adaptive Workload Estimation for Unknown Situations"
  - Use few shot learning to adapt workload estimation models to unseen tasks
  - Design & Conduct Human Subject Studies
  - Physiological Data Processing & Analysis
  - Machine Learning & Probabilistic Model Development

- Defense Advanced Research Projects Agency Project: "Resilient Emergent Properties for Autonomous Agent InteRactions"
  - Develop agent-based model for evaluating foreign agents trying to influence collective decision making algorithms.
  - Non-parametric Statistical Modelling
  - Data Analysis

- Office of Navy Research Project: "Transparent Management of Hub-based Colonies using a Graph-based Dynamic Model"
  - Interface design to enable a single human to more effectively control four groups of 200 robots
  - Design & Conduct Human Subject Studies
  - Data Analysis

University of Arkansas - Computer Science *Fayetteville, AR*
Advisors: Dr. Michael Gashler *2015-2017*

- Thesis: ""An investigation of how neural networks learn from the experiences of peers through periodic weight averaging."
  - Understanding the impact of various network topologies on a federated learning with feed-forward neural networks

NASA Langley Research Center - Dynamic Systems and Controls Branch *Hampton, VA*
Advisors: Dr. Andrew Moore *2016*

- Project: "Extracting Lidar-based Geofences for UAV Inspection of Electrical Transmission Structures"
  - Develop and evaluate different clustering algorithms for creating geofences for UAVs inspecting electrical power lines.

Mentoring

2022 **Simone Angelo S. Toribio**, Research Experience for Undergraduates Student Mentor, Oregon State University *Corvallis, OR*

Skills

- **Programming Languages:** Python, C++, Java, C, Scala
- **Tools:** Pytorch, Tensorflow, Pandas, Git
- **Math**: Pattern Recognition, Density Estimation, Deep Neural Networks, Statistic Analysis.