Felipe Felix Arias

felipefelixarias.github.io

Email : felipea2@illinois.edu
Mobile : +1-630-386-1894

Research Interests: Robotics, Computer Vision, Self-Supervision, Reinforcement Learning

Education

University of Illinois at Urbana-Champaign May 2024
Doctor of Philosophy (Ph.D.) in Computer Science ***GPA: 4.00/4.00***
Advisor: *Nancy M. Amato*

University of Illinois at Urbana-Champaign May 2019
Bachelor of Science in Computer Science (with Honors) ***GPA: 3.79/4.00***

Relevant Experience

University of Illinois at Urbana-Champaign - Parasol Urbana, IL
Research Assistant - Advisor: Nancy M. Amato *June 2019 - Present*

- Leverage spatial contextual awareness to develop robot cognition for navigation in dynamic environments that accounts for the possibility of erroneous trajectory prediction and obstacle avoidance
- Develop algorithms that improve runtime, sampling efficiency, path costs, and roadmap coverage and connectivity for robots in dynamic and realistic environments
- Deploy robotics, machine learning, and computer vision solutions for navigation and manipulation on robot platforms such as the clearpath boxer, UR5e, and hand-e gripper

Stanford University - Hazy Research Stanford, CA
Research Assistant - Advisor: Christopher Ré *June 2018 - March 2019*

- Worked on enabling weak supervision beyond the single sentence for natural language processing applications of Snorkel, a system for rapidly creating, modeling, and managing training data
- Explored various model architectures such as bi-LSTM, graph LSTM, and multi-task learning to determine which model could best benefit from the correlations between single and cross-sentence relation extraction
- Assessed the performance of Snorkel's multi-task model (Metal) by approaching relation extraction across a varying number of sentences as dependent sub-tasks

University of Illinois at Urbana-Champaign - IGL Urbana, IL
Research Assistant - Advisor: Richard Sowers *January 2018 - December 2018*

- Adapted existing image detection systems (e.g., YOLO by Redmon et al.) to extract the context and risk associated with the urban environment surrounding roadways from dash-cam footage
- Successfully detected compound objects (e.g., a cyclist from a person and a bicycle detection), scenes, and tracked objects by using off-the-shelf video object detections as inputs to machine learning models
- Used weak supervision to improve the performance and expedite the creation of classifiers by using computer vision, pose, object-specific, and cross-temporal heuristics in noisy classifiers

Publications

- **Avoidance Critical Probabilistic Roadmaps for Motion Planning in Dynamic Environments**
  F. F. Arias, B. Ichter, A, Faust, N. M. Amato
  International Conference of Robotics and Automation (ICRA) 2021, submitted.

Skills & Recognitions

- **Programming Languages/Other**: Python, C++, C, Java, R, Haskell, Javascript, Pytorch, ROS, SQL
- **Version Control**: Git, Subversion **Operating Systems**: Linux, OS X, Windows 10
- **Awards**: C. S. Larson Transfer Student Award and Scholarship, Tau Beta Pi Induction, Dean's List at the University of Illinois at Urbana-Champaign, College of DuPage Student Spotlight
- **Scholarships/Fellowships**: GEM Fellowship (2020), Saburo Muroga Endowed Fellowship (2019), Engineering Pathways (2016-2019), Hispanic Scholarship Fund (2018), Carol Stream Community College (2016), S.C. Reed (2016), H.J. Kleemann (2015), Rotary Club of Naperville (2015)