Felipe Felix Arias

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Research Interests: Robotics, Computer Vision, 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*

- Develop algorithms that enable faster pathfinding, better sampling efficiency, cheaper paths, and more robust roadmaps for robots in dynamic and realistic environments
- Leverage machine learning, computer vision, and reinforcement learning to develop algorithms that allow robots to efficiently navigate previously unseen environments
- Work on making motion planning aware of constraints in the time dimension through the use of time-location pathfinding algorithms and machine learning

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

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
- **Languages**: English (fluent), Spanish (fluent)
- **Awards**: C. S. Larson Transfer Student Award, Tau Beta Pi Induction (Top 12.5% of College of Engineering), Dean's/Honors List at University of Illinois at Urbana-Champaign and College of DuPage, 1st place at Embark on Excellence by Morrill Engineering Program, College of DuPage Student Spotlight
- **Scholarships/Fellowships**: Saburo Muroga Endowed Fellowship (2019), C. S. Larson Transfer Student Scholarship (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)