Alexandra (Alli) Nilles

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Objective: Seeking research-oriented software engineering role in robotics. Strengths in development and application of motion planning algorithms, as well as API and interface design.

EDUCATION

University of Illinois at Urbana-Champaign (UIUC) **Aug. 2015 - Aug 2020 (estimated)**

Degree: PhD Candidate in Department of Computer Science. GPA 3.73/4.0
Thesis: *Designing Boundary Interactions for Simple Mobile Robots*
Advisor: Dr. Steven M. LaValle

Colorado School of Mines (CSM) **Aug. 2011 - May 2015**

Degree: B.S. in Engineering Physics. GPA 3.93/4.0
Minor in Computational and Applied Mathematics
Minor in Public Affairs, from McBride Honors Program

SKILLS

- **Programming:** Python, C++, Haskell, MatLab, Mathematica, parallel computing, shell scripting. Comfortable with unit and integration testing, submitting/reviewing pull requests.
- **Computing:** Linux, Windows, LaTeX, Git/Github, Pandoc, high performance computing clusters.
- **Robotics:** ROS (5+ years experience with Python, C++ and Haskell client libraries, and GUI development), MoveIt, iRobot and Universal Robots platforms.
- **Experimental:** Calibration, collection and analysis of video, motion-capture, and IMU data. Prototype design and development (3D printing, soldering, microcontroller programming, etc).

EMPLOYMENT HISTORY

Research Assistant in UIUC CS Department **Aug. 2015 - May 2020**

- Explored motion planning strategies (RRT, exact geometric planners, uncertainty modelling, stability analysis) for mobile robots that deliberately contact environment boundaries.
- Developed interactive simulation and visualization programs in Python and Haskell, including interfaces with C++ ROS backends.
- Disseminated results in peer-reviewed publications and conference presentations.
- Managed and mentored ten student researchers over five years on software and hardware projects.

Teaching Assistant for ECE 470 (Introduction to Robotics) **Aug. 2019 - Dec. 2019**

- Solo instructor for weekly laboratory section (15 students). Guest lectured for two 75-minute lectures on forward kinematics (~90 students).
- Expanded course content on probability, filtering, estimation, motion planning, robot kinematics and dynamics. Wrote homework and exam problems using online coursework platform PrairieLearn.

Research Intern at Petronics (Sprite Robotics) **May 2016 - Aug. 2016**

- Worked with 3-5 engineers on development of a small, agile, robot cat toy.
- Configured a ROS server and added a Wi-Fi module to the robot to stream data.
- Developed Python program to compare robot pose estimates with ground truth from motion capture.
- Analyzed how the robot slipped on different surfaces to improve low-level controllers.

AWARDS AND HONORS

- Leung Student Venture Fund Award, UIUC ECE Department 2019
- IEEE MRS (Multi-Robot Systems) Travel Grant 2019
- Workshop on Algorithmic Foundations of Robotics (WAFR) Robot Guru Travel Grant 2018
- Saburo Muroga Endowed Fellowship, UIUC CS Department 2015
- Physics Faculty Distinguished Graduate Award, CSM 2015
- Leo Borasio Outstanding Junior Award, McBride Honors Program, CSM 2014
- President's Undergraduate Scholarship, CSM 2011-2015