Michael Andrés Lin

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EDUCATION

Stanford University
Stanford, CA
PhD candidate, Mechanical Engineering - Robotics, GPA: 3.9
2019 - Present
Principal Investigator: Dr. Mark Cutkosky

Stanford University
Stanford, CA
MS Mechanical Engineering, GPA: 3.87
2015 - 2017
Concentration: Robotics, Dynamics, Mechatronics

University of California, Berkeley
Berkeley, CA
BS Electrical Engineering and Computer Science, GPA: 3.79 with Honors
2011 - 2015
Concentration: Embedded Systems, Signal Processing and Controls

TECHNICAL SKILLS

Programming: Python, C++, C (Low level), MATLAB, PyTorch, Qt-5, C#, Git, Linux
Embedded Systems: State Machines, SPI, I2C, UART, EtherCAT, BLE
Robotics: ROS, PyBullet simulation, RBDL (Rigid Body Dynamics Library)

WORK EXPERIENCE

Flexiv Robotics Inc.
Santa Clara, CA

Senior Robotics Systems Engineer
Jan 2018 - Aug 2019

- Programmed event-driven state machines and communication interfaces using EtherCAT, SPI and UART that enabled robust and safety-redundant integration of industrial robot arm system.
- Created testing scripts in C++ to automate robot system performance verification during fabrication and designed GUI with Qt-5 to facilitate test deployment at assembly site.
- Designed and optimized a model-based Field Oriented Controller (FOC) for brushless DC motors that outperformed current motor controllers in the market.
- Led workshops within my team to help engineers get comfortable with version control workflow that resulted in more efficient project progress.

RESEARCH EXPERIENCE

Stanford University Biomimetics and Dexterous Manipulation Lab
Stanford, CA

Graduate Researcher, Advisor: M. Cutkosky, PhD
Sep 2019 - Present

- Investigated design and algorithms that allow robots to leverage contacts and the sense of touch to explore and manipulate in unstructured environments.
- Developed a particle filtering algorithm in Python that allows a robot to use contact with objects to determine their location to sub-millimeter accuracy in real-time.
- Integrated a robot arm with tactile sensing skin using ROS and implemented a Potential Field-based controller to allow the robot to reach into constrained spaces while minimizing forces.
- Created software API in Python and ROS to integrate robot systems and facilitate research progress for colleagues in lab.

Graduate Researcher, Advisors: M. Cutkosky, PhD & B. Daniel, MD
Sep 2015 - Jan 2018

- Developed surgical navigation system using a shape sensing biopsy needle in combination with a Mixed-reality headset to visualize a needle during insertion inside the patient body.
- Implemented a Unity 3D application (in C#) that streams real-time sensor data via TCP sockets and renders a 3D deformable mesh that matches the shape and pose of a real biopsy needle.