Dennis Wai San Leandro, CA
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Objective: To obtain a summer internship with opportunities in robotics and controls

Education: PhD Mechanical Engineering University of California Berkeley | GPA 3.914 Expected: 2018
B.S. Mechanical Engineering University of California Berkeley | GPA 3.817 2013

Professional Experience

Summer Intern JPL's Mobility and Robotic Systems in Section 347, Pasadena, CA **May 2013 – Aug 2015**

Mars Sample Transfer Testbed (MSTT) for Mars Sample Return

- Primary Robotic 6 DOF Arm operator for MSTT and responsible for demonstrating technology readiness and robustness for test tube pick up in a broad spectrum of regolith to simulate pick up on Martian surface.
- Employing a data-driven approach to inform the Sample Retrieval and Launch (SRL) rover design, particularly the pose of the Orbiting Sample (OS)
- Analyzed a 3/4 DOF robotic arm's kinematics to determine workspace accessibility in MSTT, which involves transferring a cache from one rover to another so that the cache can be returned from Mars to Earth. My analytical work changed the Mars Program Office's original mission concept into a cache-less alternative.

Comet Surface Sampling and Return (CSSR)

- Assisted in the prototyping of a novel comet sampling tool for the comet surface sample return mission
- Designed and manufactured the electrical control system with pneumatic and solenoid actuators

Mechatronics Graduate Researcher with Professor Tomizuka, UC Berkeley **May 2011 –Present**

- Developing control algorithms for robust precision tracking in intersatellite laser communications and implementing on an ASCTEC quadcopter testbed
- Coauthored publication in DSCC 2014 on Steady State Marginalized Particle Filters
- Coauthored the publication "A Network-Based Monitoring System for Rehabilitation" for the Advanced Intelligent Mechatronic conference in 2012
- Developed software in Arduino and LabVIEW to manage a wireless sensor network for human motion tracking
- Created and designed various PCBs for controller purposes in Tailbot, a robot with inertial assisted control by an active tail inspired by lizards; Tailbot was also a featured robot on the front page of Nature magazine

Pioneers in Engineering (PiE) Advisor, UC Berkeley **May 2011 – Present**

- CEO for the Pioneers in Engineering 501©3 Foundation, which promotes STEM education through an exciting, mentorship based process
- Implemented a Docker container based infrastructure for PiE's web systems, such as Mediawiki, Discourse etc.
- Spearheaded efforts to recruit Berkeley undergraduates to become robotics mentors for underprivileged high school students in our annual 300+ robotics competition
- Hosted the inaugural and well-received Robots vs Dinosaur Science Festival, a 100+ event, complete with 8 novel science activities in cooperation with the Lawrence Hall of Science

Conference Publications

- Joonbum Bae; Haninger, K.; Wai, D.; Garcia, X.; Tomizuka, M., "A network-based monitoring system for rehabilitation," Advanced Intelligent Mechatronics (AIM), 2012 IEEE/ASME Interna- tional Conference on , vol., no., pp.232,237, 11-14 July 2012 IEEE Link
- Paul Backes; Wai, D et al. "Sampling System Concepts for a Touch-and-Go Architecture Comet Surface Sample Return Mission." American Institute of Aeronautics and Astronautics (AIAA), AIAA SPACE 2014 Conference and Exposition June 2014 AIAA Link
- Yizhou Wang; Wai, D.; Tomizuka, M., "Steady-state Marginalized Particle Filter for Attitude Estimation" Dynamic Systems and Control Conference (DSCC) July 2014 ASME Link
- Kyle Edelberg; Wai, D; Reid, J; Kulczycki, E; Backes, P. "Workspace and Reachability Analysis of a Robotic Arm for Sample Cache Retrieval from a Mars Rover" American Institute of Aeronautics and Astronautics (AIAA), AIAA SPACE 2015 Conference and Exposition Sept 2015 AIAA Link

Academic Honors and Extracurricular

Cal Band First Trombonist **July 2010 – May 2013**
Tau Beta Pi – Engineering Honor Society, Former Service Chair, Current Member **Jan 2011 – Present**
Pi Tau Sigma – ME Honor Society, Student Service Member, Current Member **Jan 2011 – Present**