Jianwei Sun

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Education

UCLA | Los Angeles, CA
Ph.D. & M.Sc. in Systems and Control
Sept 2019 - June 2024 (Expected)
Cumulative GPA: 3.96/4.0

ETH Zürich | Zürich, Switzerland
M.Sc. in Electrical Engineering
Sept 2017 - Sept 2019
Cumulative GPA: 5.71/6.0

University of Toronto | Canada
B.A.Sc. in Engineering Science (ECE)
Sept 2012 - June 2017
Cumulative GPA: 3.79/4.0

Publications

Sensor Reduction, Estimation, and Control of an Upper-Limb Exoskeleton
Feb 2021, Robotics and Automation Letters (RA-L)

Vehicle Platoon Control with Virtual Path Constraints
Aug 2019, IEEE Conference on Control Technology and Applications (CCTA)

Admittance Control Scheme Comparison of EXO-UL8: A Dual-Arm Exoskeleton Robotic System
June 2019, IEEE Conference on Rehabilitation Robotics (ICORR)

Synthesis of a Multi-beam Dual Reflectarray Antenna using Genetic Algorithms
July 2017, IEEE Symposium on Antennas and Propagation (APS)

Skills

Programming
C/C++, Python, MATLAB, Java, Ruby
Software
Cadence Allegro, Altium, Simulink, LTSpice, ModelSIM, SolidWorks
Hands-on
Soldering, hardware validation, circuit debugging, prototyping

Work Experience

Apple | Wearable Systems (Internship)
Sept 2018 - Feb 2019 | Cupertino, CA
- Designed a drop-in test SIP for the Apple Watch to quantify coexistence issues in system form-factor
- Developed software toolchain to automate data extraction, analysis, and processing

Intel | Programmable Solutions (Internship)
June 2017 - Sept 2017 | San Jose, CA
- Developed hardware interfaces for a 4K video encoder on a PCIe-based FPGA accelerator card
- Simulated and debugged hardware with ModelSim and VCS-MX

Apple | Wearable Systems (Internship)
May 2015 - May 2016 | Cupertino, CA
- Developed a generic hardware validation platform and fault-tolerant software to stress-test a sensor subject to unpredictable failures
- Successfully identified a rare reliability failure mode and aided cross-functional teams in arriving at a mass-producible solution

Research Experience

University of California, Los Angeles (UCLA)
Feb 2019 - Present | Bionics Lab
- Developed virtual dynamics to improve admittance control of a bimanual 8 DoF upper-limb exoskeleton for physical rehabilitation
- Developed a Kalman filter-based sensor fusion method to achieve similar human-exoskeleton transparency with a subset of sensors
- Implemented a rate-limiting filter to suppress unstable human-induced oscillations due to physiological and mechanical time delays

Swiss Federal Institute of Technology (ETH Zürich)
Feb 2018 - Aug 2018 | Institute for Dynamic Systems and Control
- Developed a distributed admittance controller for human-robot interaction with a path-constrained quadcopter platoon

Oct 2017 - Feb 2018 | Computer Engineering and Networks Laboratory
- Developed a radio-based ultra low power (~10 μW) clock synchronizer with nanosecond precision for wireless IoT devices

May 2016 - Aug 2016 | Institute for Dynamic Systems and Control
- Characterized brushless motor dynamics for quadcopters

University of Toronto
Sept 2016 - June 2017 | Reconfigurable Antenna Laboratory
- Developed a genetic algorithm-based optimizer for beam synthesis on a Cassegrain reflectarray antenna system

National University of Singapore
May 2014 - Aug 2014 | Mechanical Engineering
- Characterized dielectric elastomer dynamics for use as artificial muscles and developed a 5kV power supply waveform generator