

Jianwei Sun

✉ jian58sun@gmail.com

☎ +1 (310) 923-6599

🌐 jianwei-sun.github.io

in /jianwei-sun

Education

UCLA | Los Angeles, CA

Ph.D. & M.Sc. in Systems and Control

Sept 2019 - Mar 2024

Cumulative GPA: 3.98/4.0

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

A Safety-Focused Admittance Control Approach for pHRI with Rigid Multi-Arm Serial Link Exoskeletons

2024, (TMECH)

Suppressing Delay-Induced Oscillations in pHRI with an Upper-Limb Exoskeleton using Rate-Limiting

Oct 2022, (IROS)

Sensor Reduction, Estimation, and Control of an Upper-Limb Exoskeleton

Feb 2021, (RA-L)

Vehicle Platoon Control with Virtual Path Constraints

Aug 2019, (CCTA)

Admittance Control Scheme Comparison of EXO-UL8: A Dual-Arm Exoskeleton Robotic System

June 2019, (ICORR)

Skills

Programming

C/C++, Python, MATLAB, Git, Linux

Software Tools

Eigen, Boost, MuJoCo, CMake, GitHub

PREEMPT_RT, Simulink, SolidWorks

Hands-on

Hardware verification, 3D printing, prototyping, circuit debugging, soldering

Work Experience

Skydio

June 2024 - Present | Autonomy Engineer

- Implementing improvements to quadrotor planner and controller
- Developing unit tests for verifying end-to-end behavior

June 2022 - Sept 2022 | Autonomy Intern

- Evaluated feasibility of a quadrotor emergency three-rotor landing
- Implemented and verified an IMU-based reduced-attitude controller

Apple

Sept 2018 - Feb 2019 | Wearable Systems Intern

- Designed a drop-in test SIP for the Apple Watch to quantify RF coexistence issues in system form-factor
- Created software toolchain for automated data extraction and analysis

Intel

June 2017 - Sept 2017 | Programmable Solutions Intern

- Developed interfaces for PCIe-based H.265 video encoder FPGA

Apple

May 2015 - May 2016 | Wearable Systems Intern

- Developed a generic hardware validation platform and fault-tolerant software to stress-test sensors 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 open-source safety-focused admittance control library for pHRI with real-time collision avoidance ([Github](#))
- Investigated holonomically constrained admittance control using feedback linearization for robot-assisted rehabilitation
- Implemented joint-space controller with symbolic dynamics
- Developed a Kalman filter-based sensor fusion method to achieve comparable human-exoskeleton transparency with a subset of sensors
- Investigated rate-limiting to suppress human-induced instability

Swiss Federal Institute of Technology (ETH Zürich)

Feb 2018 - Aug 2018 | Institute for Dynamic Systems and Control

- Developed a distributed admittance controller for pHRI with a path-stabilized quadrotor platoon using transverse feedback linearization

Oct 2017 - Feb 2018 | Computer Engineering and Networks Laboratory

- Developed a radio-based ultra low power ($\sim 10 \mu\text{W}$) clock synchronizer with nanosecond precision for wireless IoT devices

May 2016 - Aug 2016 | Institute for Dynamic Systems and Control

- Characterized brushless DC motor dynamics for quadrotors

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