PENGCHENG "FRANK" CAO

Engineer, Researcher, Instructor, and Content Creator

p5cao@eng.ucsd.edu | +01-619-381-1659 | Palo Alto, CA
pengcheng-frank-cao-a5349b125 | p5cao | 0000-0001-6652-3523

TECH STACK

- Python proficient
- MatLab proficient
- C&C++ proficient
- Mechanical Design
- GD&T Drawing proficient
- Process Dev & Optim
- Injection Molding
- Regulatory Compliance
- Sheet Metal processing
- Manufacturing Planning
- Failure analysis
- Abaqus
- ANSYS
- CATIA
- Problems Solving
- SolidWorks 3D proficient
- AutoCAD proficient
- Validation & Quality Control
- Technical Documentation
- Communication Skills
- Teaching

LANGUAGES

Chinese (Native)
English (Fluent)
German (B2-Professional)

REFERENCES

Prof. Falko Kuester
falko-kuester-89322051
fkuester@eng.ucsd.edu

Mr. Bensen Xie
bensenxie
bensenx@valuewds.com

ABOUT ME

Mechanical, processing, and manufacturing engineer with a demonstrated history of working in multiple engineering disciplines. PhD in Mechanical Engineering at UC San Diego. Engineer-in-Training (EIT) certified.

EXPERIENCE

Mechanical Design Internship | GrayMatter Robotics

Jun 2022 – Aug 2022 | Los Angeles, CA

- Electro-mechanical design and integration of Robotic Scan & Sand end effector. Sensor integration and feedback motion control.
- Design and assemble customer-facing parts, conduct Design for Manufacturing (DFM) reviews with suppliers and support tooling bring up.

Processing/Manufacturing Engineer | Value Wholesaler

Mar 2018 – Sep 2019 | Los Angeles, CA

- Development and optimization of manufacturing processes, equipment setup, and troubleshooting. Experience with implementing Lean manufacturing principles, process validation (IQ, OQ, PQ), and working under regulatory standards (e.g., FDA 21 CFR Part 820, ISO 13485).
- Designed a piece of bar code generating software in Python, increasing production workers' efficiency by 14% .

EDUCATION

PhD, MSc in Mechanical Engineering | University of California, San Diego

Sep 2019 – June 2024 | San Diego, CA

- Specialize in software design, dynamic systems and control, and mechanical and mechatronic systems design.

PROJECTS

Project 1: BeagleMAV: 3D-printable 6-DoF UAV Design and Control | | |

Jan 2019 – Jan 2020

- Mechanical and electronic design of a class of multi-rotors with in-plane maneuverability and direct decoupled 6-DoF control.
- Firmware and software programming with hands-on hardware bring-up and qualification.

Project 2: Dambot-Mini: Robotic Crawler Design for Subterranean Navigation | | |

Apr 2023 – Sep 2023

- Integrated a sensor stack equipped with an impressive array of modalities, including 3D LiDAR, RGBD cameras, FPGA sensor SoC, and multi-camera systems.
- SLAM functionality with active research and explorations of dynamic object and noise filtering.
- Navigate inside a tunnel using pure pursuit algorithm tracked by PID.