Katelyn E. Chen

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Education

Stanford University Stanford, CA

B.S. Mechanical Engineering (Dynamics Systems and Controls Concentration) *Sep 2021 – present*

Relevant Coursework: Dynamic Systems, Controls, and Vibrations; Mechanics of Materials; Fluids Engineering

Experience

Undergraduate Researcher - ARMLab, Stanford University Jun. 2023 – present

Assistive Robotics and Manipulation Laboratory, Advised by Monroe Kennedy III (PI), Ken Wang *Stanford, CA*

- Developed an iOS app from scratch using Swift to generate real-time depth panoramas for input into a trajectory prediction machine learning model (long short-term memory network)
- Reduced an 8-item data collection hardware setup to 1 phone while sustaining a data capture speed of 60 fps
- Currently converting the PyTorch model to CoreML for phone deployment and designing the phone harness

Makerspace Consultant - create:space, Stanford University Sep. 2022 – present

Stanford Lathrop Learning Hub *Stanford, CA*

- Spearheaded the development of and hosted 15+ workshops for 130+ participants to teach rapid prototyping techniques, including CAD, 3D printing, and laser cutting, to foster design and making skills
- Offered expert guidance during open office hours for the 35,000 people Stanford population by addressing engineering project queries and providing assistance with makerspace equipment

Undergraduate Researcher - ILIAD, Stanford University Mar. – Jun. 2023

Intelligent and Interactive Autonomous Systems Group, Advised by Dorsa Sadigh (PI) *Stanford, CA*

- Worked with PhD student Priya Sundaresan to optimize robot-assisted feeding by investigating the impact of geometry on robot gripper strength and dexterity when acquiring food items with diverse deformation properties
- Implemented Python code for path planning, facilitating a comparative analysis of the precision between the Franka Emika Panda and WidowX-200 robot arms

Mechanical Engineering Intern - Quality Analysis Lab Jul. – Aug. 2022

GlobalWafers Co. Ltd., Taisil Branch *Hsinchu, Taiwan*

- Optimized bulk micro defect density in silicon wafers and defect measurement alignment through data analysis and infrared tomography recipe assessment
- Utilized image annotation software to track oxygen-induced stacking faults in wafers, generating a comprehensive database ready for AI/ML utilization in defect detection and type recognition within the company

Projects

Design and Prototype of a Glass-to-Sand Crusher Jan. – Jun. 2023

Engineers for a Sustainable World *Stanford, CA*

- Directed a team of 3 in designing and building a functional prototype (3D printing, laser cutting) of a cost-effective glass crusher that can be reproduced in the Maasai Mara
- Evaluated crushing mechanisms (jaw crusher, crank and slider, impact mill) and power sources through physical prototyping and mathematical analysis

Finite Element Analysis (FEA) of an Additive Manufactured Shelf Mar. – Jun. 2023

Design for Additive Manufacturing, Advised by Dan Somen *Stanford, CA*

- Conducted shape optimization and static stress studies in Fusion 360 to evaluate stress concentrations under proper and improper use to inform design choices and identify targets for material removal
- Achieved a 65% total mass reduction while retaining a safety factor of 5 for the final product

Service/Leadership

Stanford Undergraduates in Mechanical Engineering (SUME), President Sep. 2021 - present

Stanford Engineers for a Sustainable World (ESW), International Lead Jan. 2023 – present

Stanford Solar Car Project, Mechanical Team Member Sep. 2021 – present

Skills

Technical: CAD/FEA (SolidWorks, Fusion 360), Python, C++, Swift, MATLAB, Arduino, Raspberry Pi

Product Realization: Additive manufacturing, laser cutting, machining, welding, sand casting, woodworking

Languages: Bilingual English and Mandarin