Gilbert Chang

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Education

Purdue University – West Lafayette, IN August 2023 – May 2025
BS in Mechanical Engineering, BS in Computer Science, Minors in ECE and Math GPA: 3.80/4.00
Relevant Coursework: Measurement and Control Systems II, Advanced Dynamics, Electrical Engineering Fundamentals II, Mechanics of Materials, Computer Architecture

Experience

Undergraduate Research Assistant November 2024 – Present
Computational Motion, Manipulation, and Autonomy Lab at Purdue University

- Developed a Python framework for modeling robotic arms, collision detection, and path planning, currently developing constrained path planning.
- Implemented inverse kinematics solving methods (e.g., pseudoinverse Jacobian, damped least squares).

Undergraduate Research Assistant January 2024 – May 2024
Purdue University School of Mechanical Engineering

- Designed forged carbon bike wheel hub, resulting in ∼40% weight reduction compared to metal counterparts.
- Optimized frame strength with Fusion 360 generative design tools, conducted FEA simulations with Ansys Mechanical, validated designs to ISO load requirements.
- Researched Kammtail virtual foils, 3D-printed various geometries with test stands for wind tunnel validation.
- Authored final report on strength gains and drag reduction, documentation used for system-wide integration.

Undergraduate Teaching Assistant June 2024 – August 2024
Purdue University Elmore Family School of Electrical and Computer Engineering

- Graded weekly assignments for 200+ electrical engineering students, provided feedback, and held office hours to address technical questions.

Projects and Involvement

Purdue University Baja SAE, Aerodynamics and Composites Subteam August 2023 – Present

- Designed standardized dogbones for organizational material testing, fabricated 3D printed and milled aluminum forged carbon molds, collected FEA parameters utilizing universal testing machines.
- Modeled car nosecone and undertray using SolidWorks, used insights from Ansys Mechanical and Fluent simulations for design choices, approx. 10% reduction in drag coefficient compared to previous iteration.
- Authored literature reviews and documentation on aerodynamic devices in racecars and pressure controllers in vacuum assisted resin transfer molding.

Purdue University System-on-Chip Extension Technologies June 2024 – August 2024

- Streamlined student chiplet development by developing 16-pin chiplet architecture in KiCAD and establishing communication protocols, presented findings and results at Summer Undergraduate Research Symposium.

Biomemetic Robotic Hand: Designed cable-driven robotic hand, custom planetary gearbox servo motors; performed force/dynamics analysis; developing CAD models in SolidWorks.

Improved Rice Washer: Prototyped and fabricated device to streamline rice-washing; calculated tolerance stackups, authored material/force analysis reports, produced technical drawings for fabrication.

Skills

CAD: Siemens NX, SolidWorks, Autodesk Inventor, Autodesk Fusion 360, KiCAD, LTSpice
Analysis and Control: Ansys Mechanical, Ansys Fluent, Java, C, C++, ROS, Python, MATLAB, Simulink
Technologies and Methodologies: FEA, CFD, DFM, DFA, GD&T, FDM, CNC/Manual Mills & Lathes