NATHAN GE (650) 274-6331 |223 Killdeer Ct. Foster City, CA 94404| nzge@g.ucla.edu| https://github.com/nzge | website | linkedin.com/in/nzge

Mechanical Engineer with experience in CAD design and precision tool operation. Adept in research, analysis, and laboratory methods with strong computation, simulation, and mechanical design skills, ensuring reliable test and design outcomes for innovative projects.

EDUCATION

University of California, Los Angeles – Los Angeles, CA

- Master of Science | Mechanical Engineering — Anticipated Start: Sep 2025
- Bachelor of Science | Mechanical Engineering, Bioinformatics Minor — GPA: 3.681 — Graduated: Dec 2024
  - Coursework: Dynamic Systems Control, Electronic Circuits, Advanced Strength of Materials, Engineering Thermodynamics

WORK EXPERIENCE

Protech Materials | *Mechanical Engineer Intern – San Jose, CA* — Aug - Sep 2022

- Prepared Indium tin oxide sputtering targets for thin film deposition using precision masking and bonding techniques.
- Designed and modeled a precise loading rail assembly for a bead blaster in SolidWorks, enhancing part alignment accuracy by 25% and contributing to improved overall product quality assurance across the manufacturing line.

Target Discovery | *Intern – Palo Alto, CA* — Jun - Aug 2019

- Conducted lab experiments to generate over 50 mass spectrometry datasets, including meticulous pipetting and solution preparation.
- Analyzed data using PCA and hierarchical clustering in R, providing actionable insights that improved laboratory efficiency and streamlined data interpretation in a high-throughput environment.

ENGINEERING PROJECTS

ARMS Lab — Jun 2024 - Present

- Engineered a mechanical housing compliant with GD&T standards to secure the OCT probe for the IRISS beam splitter, enabling automated ocular surgery. Developed control system design in **LabVIEW** and **MATLAB** to adjust the OCT probe precisely.

Bruin Formula SAE — Sep 2022 - Mar 2024

- **Vehicle Dynamics:** Developed a state-space quarter-car suspension kinematics model in **MATLAB's Simulink** and **Simscape** to optimize suspension behavior, resulting in a 5% reduction in lap times. Conducted detailed simulations to refine suspension parameters for enhanced stability and handling. Collaborated with subteams to integrate simulation outcomes into the suspension system design.
- **Drivetrain/Powertrain:** Designed in-house ribbed and ribless CV boot molds via 3D printing, addressing the need for a custom solution and increasing cycles to failure by 25% compared to stock components. Established a resin casting workflow for greater consistency and collaborated with the composites team to optimize material selection and tooling.
- **Aero/Composites:** Created multi-element aerofoil models in SolidWorks, analyzed flow in Star-CCM+/ANSYS, and validated with wind tunnel testing, improving downforce by 15%. Applied pre-preg carbon fiber manufacturing techniques for enhanced performance.
- **Chassis:** Designed wheel temperature sensor mounts in SolidWorks; fabricated brackets using waterjet cutting and 3D printed enclosures. Machined critical suspension components using **milling** and **lathe** operations.

Capstone Delivery Robot (MAE 162E) — Mar - Jun 2024

- Implemented an object-oriented state machine in **C++** using PlatformIO for course traversal and object handling.
- Employed **Python's OpenCV** library for dice number detection to initialize location-specific object collection sequences.
- Refined design aspects through iterative prototyping using 3D printing and laser cutting based on testing and feedback.
- Designed a detailed KiCAD wiring schematic, managed BOM, and soldered components for functional circuits.

Bioinformatics: Bound/Unbound Read Classification Problem (CM 122) — Dec 2023 - Mar 2024

- Employed a supervised learning model in **Python** with **scikit-learn** to classify bound and unbound genomic reads, achieving 92% classification accuracy. Utilized techniques such as stochastic gradient learning, logistic regression, ReLU activation, and CNNs to enhance model performance.

3D4E (Recreation of Sova's drone from Valorant) — Jan - Jun 2023

- Investigated and applied PID control optimization and Kalman filtering, enhancing positional estimates and reducing RMSE by 50%.
- Modeled cosmetic drone components in Blender/**AutoCAD**. Configured and wired/soldered Teensy 4.0 and IMU hardware.

Group Mid-Power Rocket Project (MAE 96R) — Sep - Dec 2023

- Configured and optimized rocket parameters using OpenRocket and modeled using Solidworks, achieving a target apogee of 3,000 ft.
- Explored active stabilization systems (thrust vectoring, fin-controlled).

SKILLS

PROGRAMS	CAD: Solidworks (**CSWE certified 4/18/25**), AutoCAD/Fusion360, Sketchup, KiCad, Blender PROGRAMMING: Labview, MATLAB (Simulink, CarSim), Python (OpenCV, sklearn, panda), C++ (PlatformIO), R MISCELLANEOUS: HTML/CSS/JS, MS Office 365, Linux OS, LaTEX, EMACS, Obsidian, Neovim SIMULATION: Drake, STAR CCM+, ANSYS, ROS2, Gazebo
TOOLS	CNC, Mill, Lathe, 3D Printer, Solder, Laser Cutter, Waterjet, Power tools (Drill Press, Jigsaw, Band saw, Tapping Machine), Bead Blaster, Sputtering machine, Gel Electrophoresis, Micropipette, Mass Spectroscopy
LANGUAGES	English, Mandarin

ADDITIONAL ACTIVITIES

Solidworks User Group | *Workshop leader* — Dec 2024- Present

FIRST Tech Challenge Robotics | *Captain* — Nov 2015 - Jul 2019