

Kristof Balasanian

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Education

San Diego State University

May 2026

Bachelor of Science in Mechanical Engineering

Experience

Kunin - Chattanooga, TN

Aug 2025 - Present

Mechanical Engineer (Contract)

- Building a fully parametric SolidWorks model of nanofiber based, spiral wound ion exchange elements with CFD ready watertight internal flow volumes. Linked to an Excel BOM/cost model for rapid sensitivity analysis.

Amidon Heavy Industries - El Segundo, CA

Feb 2025 - Aug 2025

Mechanical Engineer Intern

- Designed and built a 900 m depth rated, hot swappable, 6s6p 18650 battery pack (21.6 V, 40 A cont.); delivering 1.6x volumetric energy density and -36% cost vs. off the shelf solutions.
- Owned architecture and preliminary design of a AUV deployment/recovery system from a USV. Scope included frame, linear actuated trap doors on linear bearings, custom chase pulley, and winch integration.
- Developed a propeller thrust stand with a load cell, V/I sensors, and Arduino to solve for efficiency.
- Designed and built a linear actuator testbed with dual moment-isolated rotary encoders for rudder PID tuning.
- Executed 3D CFD in SimScale to quantify AUV hull drag. Performed cleanup of production CAD (defeaturing, gap closing, trailing-edge removal, surface continuity), boundary layer/far-field meshing, and MRF propeller setup.
- Designed a modular 3D printed electronics tray via multi body modeling in SolidWorks. Packaged Ethernet switch, 24/5 V distribution, DCDC, ESC, leak sensor, Pixhawk, Raspberry Pi, GPS, and camera all with connector clearance.

Tesla - Fremont, CA

Mechanical Design Engineer Intern, Vehicle Integration

May 2024 - Aug 2024

- Owned front-end integration on a ground up program. Responsible for vehicle architecture decisions, preliminary design, CAD maturity, EBOM structure, documentation, prototype design, and fitment trials.
- Designed a blow-molded washer bottle using CATIA 3DX surface modeling. Reduced cost of life by 25 million dollars by creating a service vs volume model to solve for an optimal 11% fluid volume increase over the baseline.
- Resolved structural body component durability trade-offs (tire sweeps, pedestrian protection, modal) via 2D sections and 3D concepts. Led a cross functional review with exteriors, body, dimensional, and manufacturing.
- Performed benchmarking research on antenna arrays and controls packaging of 8 competitor vehicles.

Projects

Aztec Electric Racing FSAE EV - San Diego, CA

Senior Engineer

Aug 2022 - May 2025

- Created a lumped capacitance HV battery thermal/energy model in MATLAB and Excel with a $\pm 9.3\%$ error. Used to select pack architecture and define cooling system requirements across drive cycles.
- Led battery system packaging and materials optimization, cut 22 lbs. of weight and reduced volume by 23%.
- Designed and fabricated a HV maintenance plug using SolidWorks, 3D Printing, and a 3-Axis mill. Reduced plug count from 2 to 1 and cut service cycle time by 10s with PPE.
- Verified tab crash survivability for several load cases using hand calculations and static structural FEA in Ansys.

Skills

Tools: SolidWorks, CATIA 3DX, CATIA V5, Ansys Mechanical, SimScale, Excel, MATLAB, R, Orca Slicer, Git

Rapid Prototyping: 3D Printing (FDM, SLS, SLA), 3-Axis Mill, Lathe, Waterjet, Laser Cutting, Sheet Metal, Composites, Adhesives, Spot Welding, Wiring, Soldering, Shop Tools

Project Management: Microsoft Office, JIRA, Confluence, Tradeoff Analysis, Integration, Test Planning