Kristof Balasanian

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Education

San Diego State University May 2026

Bachelor of Science in Mechanical Engineering

Experience

Amidon Heavy Industries - El Segundo, CA 2025 - Present

Engineering Intern

- Robotics startup building Autonomous Underwater Vehicles (AUVs) and Uncrewed Surface Vehicles (USVs).
- Designed and built a 900m depth rated 6s6p (21.6V, 40A cont.) hot-swappable 18650 battery pack and enclosure. Achieved a 1.6x higher volumetric energy density and 36% reduced pack 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.
- 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.
- Designed a propeller test stand. Selected hardware, load cell, voltage/current sensors, and an Arduino R4 to capture thrust and efficiency data across custom propeller prototypes.
- Designed and built a linear actuator testbed with dual moment-isolated rotary encoders for rudder PID tunning.
- Ran 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.

Tesla - Fremont, CA

Mechanical Design Engineer Intern, Vehicle Integration 2024

- Front-end integration of a ground-up developmental 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.
- Designed 5 integration buck components for carbon fiber manufacturing and SLS printing.

Projects

Aztec Electric Racing FSAE EV - San Diego, CA

Senior Engineer 2022 - 2025

- Developed a battery thermal and energy model with ±9.3% accuracy using MATLAB and Excel to select pack configuration, choose cooling method, and predict performance under variable track conditions.
- Led system-level research on hardware, packaging, and materials. This resulted in a 22lb weight reduction and a 23% volume decrease from the previous design while maintaining the same architecture.
- Utilized SolidWorks, 3D Printing, and a 3-axis mill to design and manufacture a high-voltage maintenance plug. Reduced number of plugs from 2 to 1 and considered use with bulky PPE, overall reducing service time by 10s.
- Performed hand calculations and ran static structural FEA in ANSYS to ensure crash survivability of battery tabs.

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