
David Klunder

Mechanical Engineering

San Diego State university

Professional and Academic Portfolio 2025

Background

Mechanical engineer graduating 2026 at San Diego State University.

I possess background experience in Design, test engineering, simulation, data analysis/acquisition, and manufacturing. I believe that with continuous growth, willingness to learn, and clear collaboration with a team that no project is too challenging. I have a proven track record of being open to learning new skills and being able to adapt.



David Klunder

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LinkedIn

Experience

May 2025–Aug 2025 Engineering Intern SpaceX

May 2024–May 2025 Engineering Intern Lawrence Berkely National Laboratory

Jan 2024–present Research Assistant San Diego State University

Jan 2024–Present Chasis and Vehichle Dynamics Member Aztec Electric Racing

May 2023–Aug 2023 Retail Sales Associate (“Athlete”) Nike San Leandro

May 2022–Aug 2022 Mechanic Intern Broadway Automotive and Transmission

Education

Mechanical Engineering
2022–2026 GPA 3.9
San Diego State University

High School
2018–2022 GPA 4.3
East Bay Innovation
Academy

Awards: Dean’s List Fall 2022/2023 | Dean's List Spring 2023/2024 | Class of 2022 Salutatorian |
Curiosity Award | Outstanding Achievement in Mathematics | College Board Capstone Diploma

PROJECTS

High-Throughput Automated Ice Adhesion Test (LBNL)

Live Racing Simulator Telemetry Display (Personal)

2014 Scion FRS Throttle Pedal Spacer (Personal)

Dynamic Pedal Positioning System (Personal)

High-Throughput Automated Ice Adhesion Test

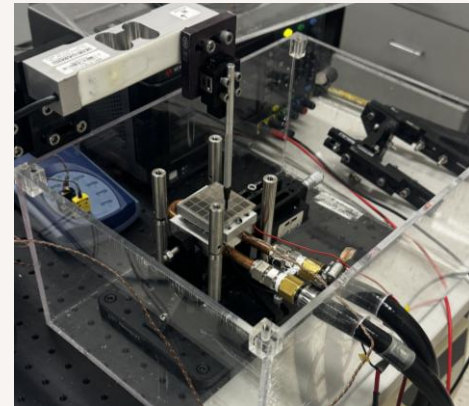
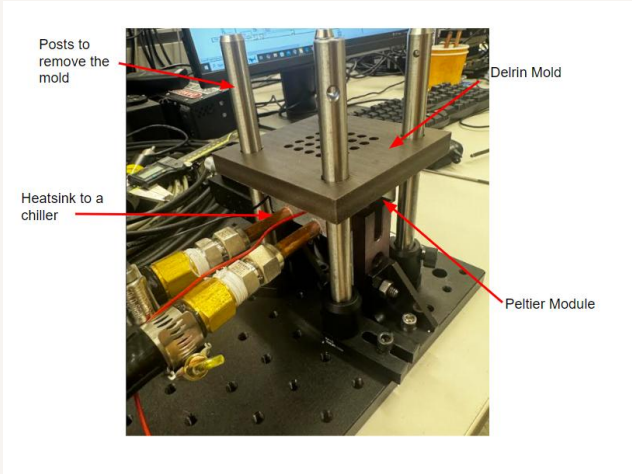
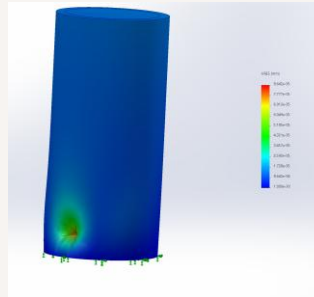
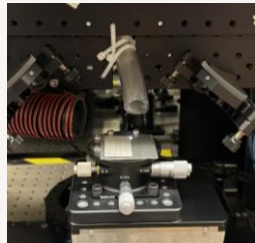
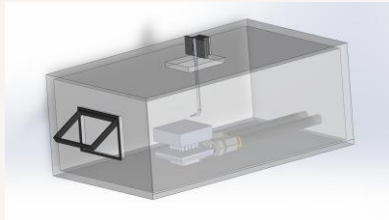
May–August 2024

[Link to full presentation](#)

I spearheaded the research and design of a high-throughput automated test to measure the ice adhesion strength of various substrates on an aluminum plate. This project involved multiple stages, from laser machining to data collection, analysis, and cooling system design.

•Design & Setup:

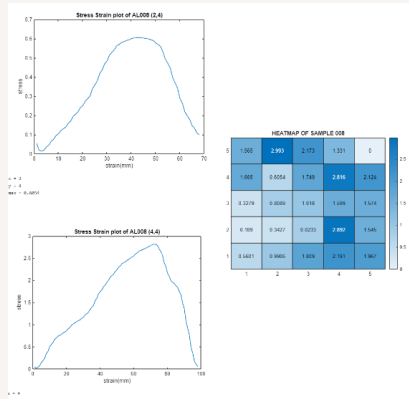
- Used a **femtosecond laser** to create a precise array of substrates on the aluminum plate.
- Developed **LabVIEW scripts** to automate the motor control, guiding the system in a snaking pattern across the array, and gathering force sensor data only when forces were detected.
- Built the motor setup and integrated a **force probe** for accurate **data collection** during testing.



High-Throughput Automated Ice Adhesion Test (Cont'd)

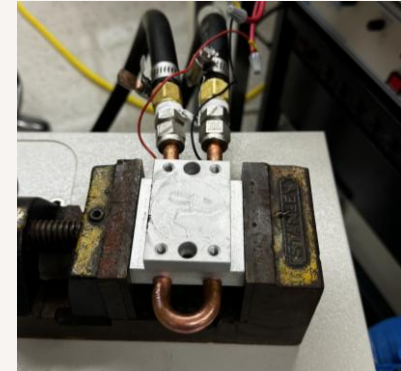
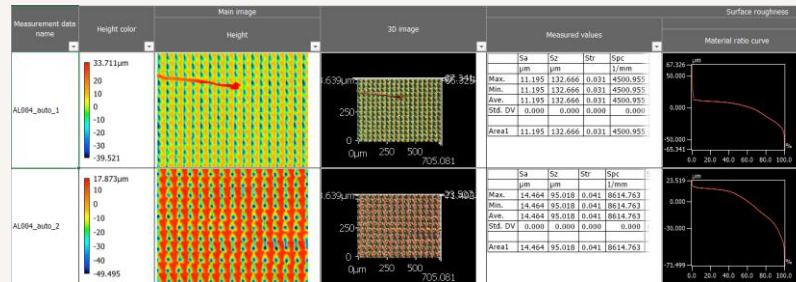
Data Collection & Analysis:

- Programmed the **LabVIEW** system to automatically log up to 10,000 data points in **Excel**, streamlining the data storage process.
- Created a **MATLAB script** to sort the data based on array positions, generating stress-strain plots for each substrate, and producing heat maps of the maximum forces for visual analysis.
- Organized data outputs by automatically saving individual reports in designated folders.



Cooling System Design:

- Designed and implemented a **Peltier cooling system** capable of reaching temperatures as low as -40°C to maintain substrate conditions during testing.
- Applied **thermodynamic principles** to regulate the cooling process and efficiently draw heat away from the system.



Live Racing Simulator Telemetry Display

July–August 2024

[GitHub Download Repository](#)

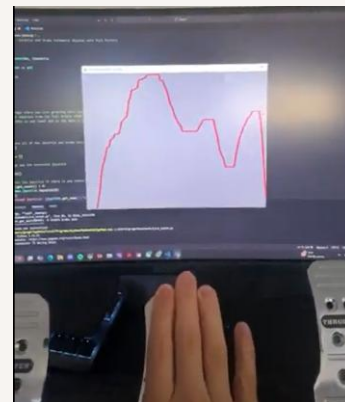
[Link to video example](#)

I developed a Python script to capture and display real-time throttle and brake telemetry from any racing simulator controller. The goal was to provide immediate feedback during sessions, enabling quick adjustments, which traditional telemetry software like MoTeC (i2 database) only offers after the session is complete.

•Programming & Libraries:

- Learned **Python** and applied the **Pygame** library to access and read live input data from controllers. Pygame's functionality allowed me to capture the throttle and brake pressure via their respective axis values in real-time.

matplotlib

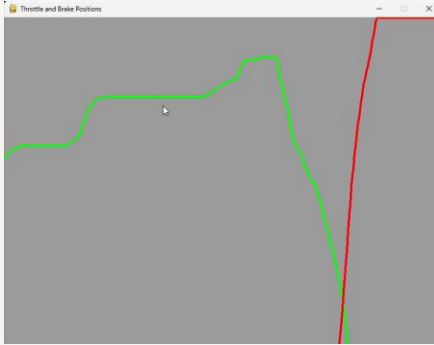


Live Racing Simulator Telemetry Display (Cont'd)

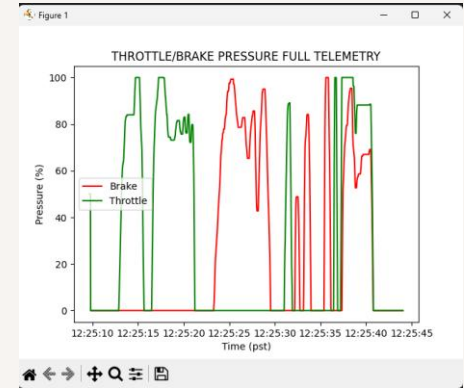
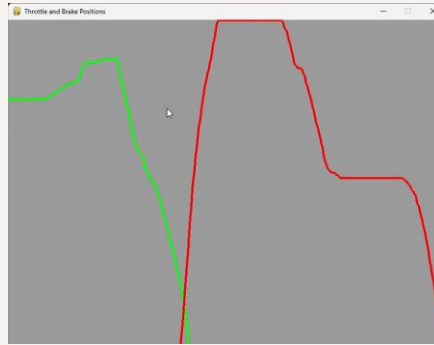
July–August 2024

[GitHub Download Repository](#)

[Link to video example](#)



2 seconds



•Real-Time Feedback:

- Designed the script to provide **live telemetry** during simulator sessions, addressing a key gap in traditional software by offering immediate insights on driver performance.
- Integrated the **datetime library** to create a **live scrolling window**, displaying the last 10 seconds of telemetry. This ensured a clutter-free interface that could be easily glanced at, without overwhelming the user with too much historical data.

•Session Reporting:

- Upon the end of a session, the script automatically generates a **full session report** using **matplotlib**, displaying comprehensive data on throttle and brake behavior throughout the run. This allows for detailed post-session analysis and review.

Skills Used

- Python
- Data Analysis
- Data Acquisition
- Telemetry

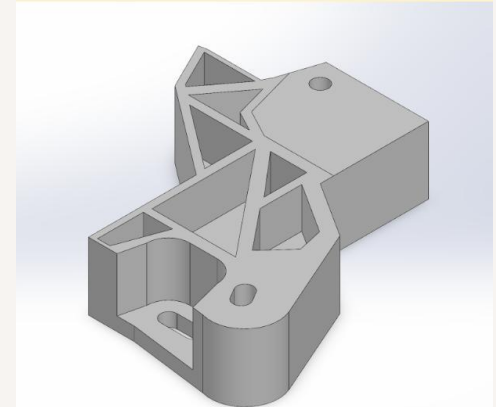
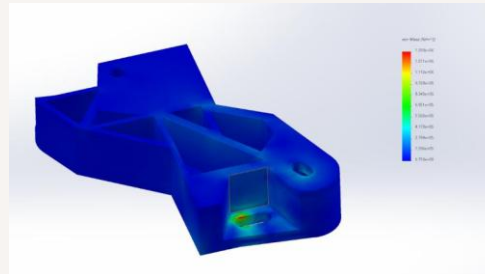
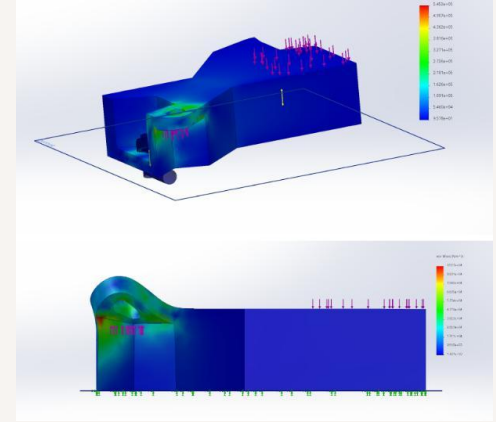
2014 Scion FRS Throttle Pedal Spacer

July–August 2024

I designed and manufactured an adjustable pedal spacer for my 2014 Scion FRS to improve driving ergonomics by elevating the pedal by 25mm while allowing side-to-side adjustment. This project involved both design and manufacturing phases.

•Design Process:

- Utilized **SOLIDWORKS** to model the pedal spacer with 3D simulations, optimizing for both elevation and side-to-side adjustability.
- Conducted multiple **design iterations** to refine the geometry and ensure the spacer maintained structural rigidity under load.
- Performed **finite element analysis (FEA)** to verify stress distribution and material efficiency.



2014 Scion FRS Throttle Pedal Spacer (Cont'd)

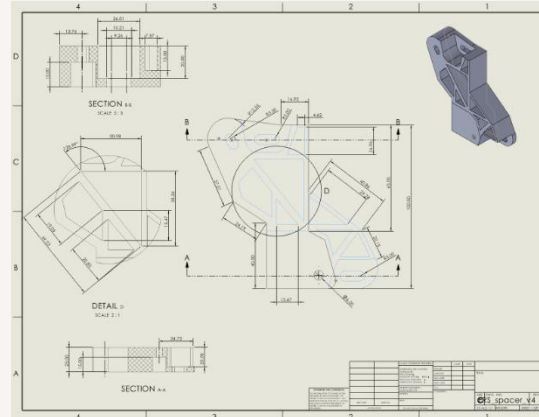
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•Manufacturing:

- The final design was 3D printed using high-strength filament
- Focused on efficient material use to minimize waste and ensure cost-effective production.
- Installed the spacer in my vehicle, where it has performed flawlessly over several months without any signs of wear or failure.

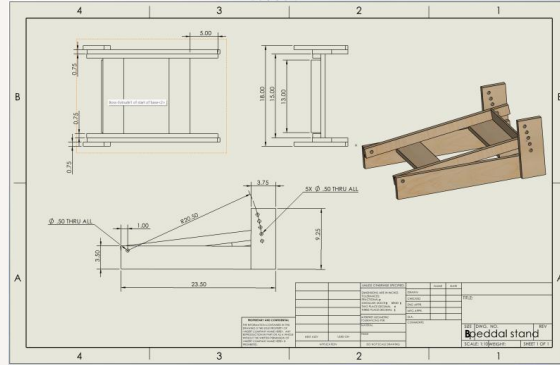
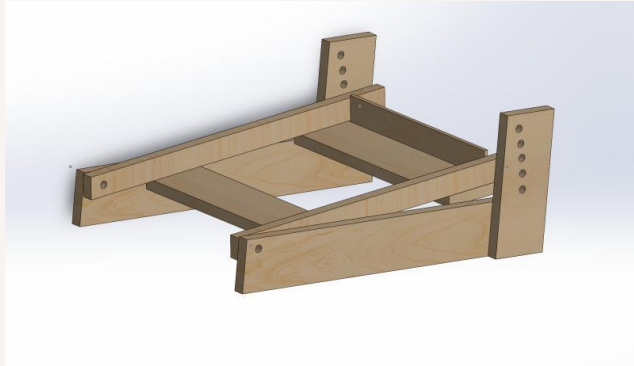
Skills Used

- Finite Element Analysis (FEA)
- SOLIDWORKS
- Project Management
- Prototyping
- 3D printing



Dynamic Pedal Positioning System

May-June 2023



I created a dynamic pedal positioning system for the Thrustmaster T3PA pedal set, aimed at providing structural support and customization.

- Designed a robust system to support loads on the pedals, ensuring stability and eliminating unintended movement.
- Integrated **anti-slip rubber pads** and snug edges to enhance stability.
- Developed a **lever mechanism** for adjustable pitch angles, allowing individual customization.
- Created and assembled the design in **SOLIDWORKS**, with an emphasis on **efficient material use** to minimize waste.

Skills Used

- SOLIDWORKS
- Project Management
- Prototyping
- Materials Optimization

THANK YOU

Let's Keep In Touch!

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