

Julian Kobayashi

julian.kobayashi@gmail.com | juliankobayashi.com | [linkedin.com/in/jakobayashi](https://www.linkedin.com/in/jakobayashi) | (650) 285-7503

Education

Worcester Polytechnic Institute *Student - Worcester, MA*

August 2022 - May 2026

GPA: 3.97

- B.S. in Mechanical Engineering, B.S. in Robotics Engineering

Experience

Toyota Research Institute - Mobile Manipulation *Robotics Engineering Intern - Los Altos, CA*

May 2025 - July 2025

- Developed 5-degree-of-freedom (DOF) torso for Toyota Research Institute's general mobile robotics platform
 - Created Python-based simulation tool to evaluate actuator sizing and drive high-level design direction
 - Designed structure and interfaces for the torso, complete with wire harness packaging and collision bodies
 - Optimized structural components using Onshape FEA, reducing mass while minimizing deformation
 - Built a unique software species, allowing the new torso to work seamlessly with TRI's existing software stack
 - Performed a teleoperated pick-and-place action to validate functionality of the 5-DOF torso robotic platform
- Owned the mechanical and electrical integration of a custom drop-in stereo camera wrist module
 - Developed a custom Ethernet breakout PCB using KiCad, from desktop prototyping to turnkey procurement

Tesla - Low Voltage Distribution *Mechanical Engineering Contractor (Part-Time) - Remote*

September 2024 - April 2025

- Communicated with global service teams to identify incorrect and outdated wire harness drawings
- Evaluated and corrected outdated wire harness drawings using Capital Harness XC

Tesla - Low Voltage Distribution *Mechanical Design Engineering Intern - Palo Alto, CA*

January 2024 - August 2024

- Full ownership of 6 Tesla Semi Truck wiring harnesses, including design, integration, and assembly
 - Developed and designed wiring harnesses, wiring guides, and connector back shells using CATIA 3DX
 - Created wire harness drawings in Capital Harness XC for supplier use during manufacturing process
 - Drove cost-down efforts including routing simplification and part deletion, saving over \$15 per vehicle
 - Led development of 4 prototype wiring harness for use during Semi Truck validation
- Developed 3 custom injection molded clips using CATIA 3DX for Model S and Model X vehicles
 - Validated injection molded part insertion, pull-out, and deflection force using Ansys
 - Led cross-team discussions to satisfy supplier, dimensional, and interior design constraints
 - Collaborated with supply chain and external suppliers to solve DFM challenges and kick-off tooling
- Developed rework instructions to update existing stock of wire harnesses and save over \$100k

ISEE.AI - Mechanical Research & Development *Mechanical Engineering Intern - Cambridge, MA*

May 2023 - July 2023

- Designed test bench to validate a custom sub-assembly, preventing costly reworks after installation into vehicle
 - Utilized SOLIDWORKS to design parametrically driven test bench to accelerate design iteration efforts
 - Wrote custom MATLAB Simulink scripts to verify the functionality of critical components
- Developed an IP-65 rated enclosure using SOLIDWORKS with billet aluminum DFM considerations
- Utilized 3D printing and hand tools to prototype metal enclosures and plastic brackets
- Performed a tolerance stack-up analysis to maintain cost efficiency and reduce scrapped assemblies by 6%

Projects

Electric Modular One-Wheeled Electric Skateboard

September 2024 - August 2025

- Developed a balancing electric one-wheeled skateboard with a focus on modularity and DFM
- Created modular subassemblies in SOLIDWORKS utilizing GD&T to control tolerances and improve DFMA
- Designed, assembled, and spot-welded a custom modular 67v 21700 lithium-ion battery pack
- Optimized frame design using SOLIDWORKS FEA, reducing weight by 26% and maintaining a safety factor of 2
- Generated CAM with HSMWorks and machined components using 3-axis CNC mills and 2-axis CNC lathes
 - Machined a custom fixture plate for modifying the mounting pattern of COTS chain sprockets
- Showcased the project to hundreds of people at Open Sauce 2025, an annual science and technology convention

Skills & Expertise

Engineering Design: SOLIDWORKS, CATIA V5 & 3DX, Onshape, Capital Harness XC, KiCad, Altium Designer

Engineering Software: Ansys, MATLAB, Microsoft Excel, Git, HSMWorks

Manufacturing: FDM/SLA 3D Printing, CNC Machining, Sheet Metal, Shop Tools, Hand Soldering, PCB Assembly

Software Languages: C, C++, Python, Java, Simulink

Miscellaneous: Jira, Confluence, Slack, Microsoft Teams, Google Suite, Office Suite, Github