KI-HOON LEE

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EDUCATION

UNIVERSITY OF CALIFORNIA, BERKELEY | Berkeley, CA | MEng in Mechanical Engineering — Aug 2024 - May 2025

UNIVERSITY OF BATH | Bath, UK | BEng in Mechanical Engineering — Sep 2019 - May 2024

PROFESSIONAL EXPERIENCE

Mechanical Design Engineer | ZoNexus LLC | Richmond, CA — Jul 2025 – Present

- Owned full product lifecycle for precision mechanical subsystems from concept through production, delivering functional prototypes in a fast-paced startup environment through iterative design, fabrication, and testing.
- Collaborated with Lawrence Berkeley National Lab researchers to rapidly iterate hardware designs based on experimental feedback, reducing development cycle time and improving system performance.
- Integrated electromechanical assemblies including sensor arrays, stepper motor systems, and custom PCBs into unified vacuum-compatible platforms for ultra-high precision applications.
- Designed components for manufacturability using GD&T-compliant drawings, partnering with machinists and suppliers to achieve tight-tolerance fabrication (<0.0002" where critical) and repeatable assembly.
- Established material specifications, thermal management strategies, and electrical routing standards to ensure reliable operation under vacuum, cryogenic, and high-thermal-load conditions.
- Created assembly documentation and validation protocols that standardized prototype builds and enabled transition to production-scale manufacturing.

Product Design Engineer (Capstone) | Blue Goji | Berkeley, CA — Sep 2024 – May 2025

- Designed and prototyped a resistive omnidirectional treadmill for medical rehabilitation and VR applications, integrating complex electromechanical drive systems for multi-directional motion.
- Reduced Bill of Materials (BOM) by 50% through in-house fabrication of custom components via CNC machining and 3D printing, optimizing part geometry for manufacturability.
- Validated structural integrity and clinical safety through iterative Finite Element Analysis (FEA) and human-subject testing, achieving target Factor of Safety (FoS) margins.

Reliability Engineering Intern | KIMM | Daejeon, Korea — Aug 2020 - Nov 2020

- Assisted in reliability testing for advanced manufacturing systems by executing stress-test protocols to identify mechanical failure points and documenting hardware degradation across extended operational cycles.

PROJECTS

Peltier Cooler with PID Temp Controller | ZoNexus LLC — 2026

- Designed an active thermal regulation system capable of reaching below -60 °C for cryo-testing by integrating a multi-layer Peltier stack with water-cooled heat exchangers capable of operating in vacuum.
- Developed a dedicated PID controller to maintain high-resolution thermal stability under varying external loads.

Air Free Transfer Motorized Holder & Stepper Controller | ZoNexus LLC — 2025

- Engineered a multi-sample motorized holder featuring a hermetically sealed tip chamber to maintain sample integrity during transfer between ambient, argon filled glove box, and ultra-high vacuum (UHV) environments.
- Developed a custom stepper motor controller and PCB from the ground up, achieving sub 60-angstrom positioning precision verified through a Transmission Electron Microscope (TEM) imaging.

GoalE: Interactive Ball Tracking Embedded System | UC Berkeley: ME235 — 2025

- Developed a real-time multitasking system using an ESP32, ultrasonic sensors, and servo actuators to achieve autonomous position tracking and interception with a live display LabVIEW GUI control.

SKILLS

Mechanical & Design: SolidWorks, Autodesk (Fusion, AutoCAD, Nastran), GD&T, DFM/DFA/DOE, CNC Machining, 3D Printing

Electrical & Hardware: PCB Design (KiCAD, EasyEDA), Embedded Systems, Soldering, Sensors & Actuators, Thermal Analysis

Software & Control: Python (TensorFlow, PyTorch, Pandas), ML, MATLAB/Simulink, LabVIEW, PID Control, C++ (Arduino/ESP32)