Melissa Klein

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EDUCATION

Stanford University — Stanford, CA
MS in Mechanical Engineering, GPA: 4.0/4.0 — June 2024
Depth in Robotics and Product Realization
National Science Foundation Graduate Research Fellowship, Stanford Graduate Fellowship in Science and Engineering

Massachusetts Institute of Technology (MIT) — Cambridge, MA
BS in Mechanical Engineering, GPA: 5.0/5.0 — May 2021

INDUSTRY EXPERIENCE

ASML — Wilton, CT
Mechanical Design Engineer II — *July 2021 – July 2022*
- Responsible engineer for a high-precision reticle chuck that improves semiconductor lithography machine output by 33%
- Identified module requirements, performed trade studies on designs, modeled assemblies using Siemens NX, created engineering drawings, and collaborated with high-precision glass manufacturers to identify the optimal manufacturing processes
- Led weekly cross-functional engineering meetings to identify design modifications enabling 2x higher acceleration of the chuck
- Established testing protocol for upgraded cleanroom tooling and supervised CMM validation testing performed by technicians

Boeing Commercial Airplanes — Everett, WA
Flight Controls Engineering Intern with 777X Primary Flight Controls — *May 2020 – August 2020*
- Developed tests to verify linear modeling software with flight simulation data by performing frequency sweeps of signals
- Analyzed and facilitated discussions regarding discrepancies in flight test data
- Assessed flight controls test bench signal outputs to ensure pre-determined controls requirements were met

RESEARCH EXPERIENCE

Stanford Department of Mechanical Engineering — Stanford, CA
Graduate Researcher in Collaborative Haptics and Robotics in Medicine Lab & Skylar-Scott Lab — *April 2023 – present*
- Designing multi-material printheads capable of rapid material switching for direct ink writing (3D printing) of elastomeric inks
- Developed toolpaths using G-code for synchronized multi-printhead additive manufacturing of soft robots

MIT Media Lab — Cambridge, MA
Undergraduate Researcher with Biomechatronics Group — *May 2020 – May 2021*
- Thesis: "Design and Characterization of a Nonlinear Stiffening Spring for a Series-Elastic Ankle-Foot Prosthesis"
- Developed a parametric design of a nylon foot spring for a powered ankle-foot prosthesis by CAD modeling in SolidWorks, creating a mathematical model of spring deflection, and simulating the spring's complex geometries using Ansys
- Designed and built an experimental setup to test the spring's deflection due to a compressive force using an Instron Test System

German Aerospace Center (DLR) — Stade, Germany
Mechanical Engineering Intern — *June 2019 - August 2019*
- Designed tow winding device, material supply unit, and robotic end-effector prototypes for the testing of carbon composite heating methods used in the Automated Fiber Placement process for airplane frame manufacturing
- Created prototypes by CAD modeling, generating engineering drawings, and assembling and adjusting features to fit design constraints

MIT Department of Mechanical Engineering — Cambridge, MA
Undergraduate Researcher at Therapeutic Technology Design and Development Lab — *September 2018 - May 2019*
- Designed a soft robotic jellyfish prototype by generating design parameters via MATLAB, CAD modeling silicone molds using SolidWorks and fabricating pre-curved fiber-reinforced actuators capable of controlled complex bending motion
- Investigated actuator flexing with different pressure inputs, helped analyze the data using digital image correlation and helped demonstrate successful movement of the prototype in media such as water

SKILLS & AFFILIATIONS

Design & Analysis: SolidWorks, Onshape, Siemens NX, Autodesk Fusion 360, Abaqus, Ansys
Manufacturing: CNC Machining, 3D Printing, Thermoforming, Injection Molding, Sheet Metal Working, Powder Coating, Sandcasting
Programming: MATLAB, Python, Java, C++, G-code
Distinctions: Tau Beta Pi Engineering Honor Society, Phi Beta Kappa Honor Society, Pi Tau Sigma Mechanical Engineering Honor Society