

Murat Khidoyatov

U.S. Permanent Resident

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Technical Skills

Design & Modeling: SolidWorks, OnShape, GD&T (ASME Y14.5), DFM, DFA, Mechanism Design

Simulation & Analysis: FEA (ABAQUS, COMSOL), CFD, MATLAB, V&V, Structural Optimization

Fabrication: CNC Machining, Manual Lathe/Mill, 3D Printing (SLA/FDM), Sheet Metal, Prototyping

Programming & Controls: Python, C/C++, Embedded Systems, Mechatronics

Education

Yale University

Graduation Date: May 2027

B.S. Mechanical Engineering (ABET)

Relevant Coursework: Mechatronics, Mechanical Design, Material Science, Thermodynamics, Fluid Mechanics

Awards: Competitive Yale personal research grant (8% acceptance rate)

Work Experience

Oak Ridge National Laboratory

Oak Ridge, TN · Summer 2025

Mechanical Engineer R&D Intern

- Reduced process cycle time by 66% (12+ hr to 4 hr) by designing and fabricating 3D-printed tooling for nuclear material handling under DFM constraints.
- Performed hardness and conductivity characterization on 100+ aluminum alloy samples; developed processing maps that informed downstream structural material selection for EV components.
- Built a data-driven computational pipeline to predict aluminum alloy properties with 96% accuracy, enabling rapid screening of candidate materials without additional physical testing.

Engineering Projects

Yale Undergraduate Robotics

2024 – Present

President & Rover Sub-team Lead

- Led mechanism design and structural integration of a deployable Mars rover life-detection system; managed a 10-member team with full BOM and part drawing documentation.
- Validated a 50N linear actuator deployment mechanism to a 2.0x safety factor using FEA (COMSOL) and physical load testing.
- Designed a 4-DoF robotic arm with custom forward/inverse kinematic simulator for path planning and joint interference analysis.
- Fabricated custom sheet metal extrusions and integrated embedded sensor systems to optimize structural rigidity and optical alignment.

Yale – AID (Assistive Integrated Devices)

2023 – 2025

Glove Project Team Lead & Vice-President

- Secured \$5,000+ in project funding and led a 7-member multidisciplinary team to deliver a custom passive prosthetic limb to a pediatric patient.
- Performed root cause analysis on pneumatic actuator failures; iterated on 3D-printed silicone mold designs to improve mechanism reliability.
- Optimized prosthetic stiffness and flexibility via SolidWorks FEA; applied DFA principles for ease of assembly and field maintenance.

Yale Engineering Humphrey Lab

New Haven, CT · 2023 – Present

Undergraduate Researcher

- Constructed computational models coupling FEA with data-driven methods to accelerate constitutive material characterization for flexible structural components.