Sampada Nepal

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EDUCATION

Massachusetts Institute of Technology Cambridge, MA
B.S. Mechanical Engineering Aug 2024 – May 2028
Relevant Coursework: 18.03 Differential Equations, 2.001 Mechanics & Materials, 2.003 Dynamics, 2.086 Numerical Computation for Mechanical Engineers, 2.670 Mechanical Engineering Tools

EXPERIENCE

MIT Space Propulsion Lab | Undergraduate Researcher May 2026 - Present

- Conducting thermal analysis for the Staged Electrospray Pathfinder 1 (STEP-1) satellite mission.
- Developing thermal models in Ansys Workbench, Thermal Desktop and SolidWorks to verify that all payload components including circuit boards and thrusters remain within allowable temperature limits across hot, nominal, and cold bounding cases derived from NASA standards..

MIT LEAP Group | Undergraduate Researcher Jan. 2026

- Designed and integrated a ROS-based teleoperation system for the Franka Emika robotic arm
- Built a Connect 4 game system pairing computer vision board state recognition with autonomous pick-and-place manipulation for human-robot gameplay.

PROJECTS

Androgynous Robotic Connector | Onshape, SolidWorks, 3D Printing, Manual Machining

- Currently designing an androgynous docking connector for the MIT WORMS walking rover, a modular robotic platform for Mars surface exploration.

Beverage Bot | Fusion360, Raspberry Pi, OpenCV, Python

- Designed and fabricated a flywheel-based launch mechanism from scratch: component selection, geometric modeling, studies on geometry and motor selection.
- Integrated mechanical, electrical, and software subsystems into a single autonomous platform, designing all three from the ground up with full documentation.

LEADERSHIP & ADDITIONAL EXPERIENCE

- **Team Lead, Human Technology Integration Club, MIT** (Fall 2025–Present): Leading mechanical and software development of an open-source hexapod robot; managing cross-functional integration of hardware, actuation, and controls.
- **MIT Makerspace Mentor** (May 2026–Present): Guiding members through machining and fabrication projects, onboard new members, and ensuring shop maintenance and safety standards.
- **Co-President, MITERI**, (Fall 2025–Present): Directing operations and event logistics for MIT's Nepali student community spanning the undergraduate and graduate student population.

TECHNICAL SKILLS

CAD & Design: Fusion360, Onshape, Solidworks, AutoCAD
Fabrication & Testing: FDM/SLA 3D Printing, CNC Machining, Manual Lathe, Manual Mill, Soldering, Laser Cutting
Robotics & Control: ROS, Gazebo, teleoperation
Programming: Python, MATLAB, C/C++, JavaScript
Perception: OpenCV, MediaPipe, sensor integration