Jaykumar Goswami

goswami.j@northeastern.edu | linkedin.com/in/goswamijay | Portfolio | Boston, MA

Education

Northeastern University — Boston, MA
Master of Science - Robotics (Concentration: Electrical and Computer Engineering) — *September 2024 – May 2026*

Birla Vishvakarma Mahavidyalaya — Gujarat, India
Bachelor of Technology - Electronics Engineering (Grant-In-Aid) - CGPA: 8.20/10 — *July 2019 – June 2023*

Technical Skills

Robotics and Automation:	**ROS**, Linux, PID Control, **AMR & ASRS Development**, CODESYS, PLC & HMI Systems, , **Digital Twin**, IIoT, KEPserverEX, ThingWorx
Electronics Systems:	Sensors and Actuators Integration, **Custom PCB Design**, Circuit Design, Microcontrollers, Embedded System Design
Designing and Prototyping:	CAD Modeling (**Fusion 360**, SolidWorks), **3D printing** (SLA and FDM), 3D scanning, CNC machining, FEM analysis, Topology Optimization
Programming Languages:	C/C++, C#, **Python**, MATLAB

Experience

Junior Research Fellow (JRF) — August 2023 – August 2024
Birla Vishvakarma Mahavidyalaya, Digital Manufacturing Lab — *Gujarat, India*

- Developed a **360kg capacity** Automated Storage and Retrieval System, ensuring industry-grade standards.
- Led the development of an industry grade Autonomous Mobile Robot (AMR) with **1500kg loading capacity** for international manufacturing company, **reducing manual handling by 60%.**
- Created a smart training manufacturing kit for students and machine operators with PLC, HMI, and I/O link.
- Enabled advanced process monitoring and better control using PTC ThingWorx & KEPserverEX.
- Worked on a 14 degrees of freedom (DoF) biped robot, simulating and replicating human walking patterns and designed **custom PCBs** for specialized DC motors with encoders.

Summer Intern — July 2023 – July 2023
Ural Federal University (UrFU) — *Yekaterinburg, Russia*

- Conceptualized a bio-inspired robot gripper for the cake production industry.
- **Reduced weight of the gripper by 40%** and **improved production line efficiency by 25%** through FEM analysis and topology optimization. Simulated the whole assembly line using ABB Robot Studio.

Researcher — December 2022 – June 2023
Space Application Centre - ISRO — *Gujarat, India*

- Built a **digital twin** model of a thermo-vacuum chamber and quantum payload using AR/VR and IoT technology, **enhancing real-time monitoring and analysis capabilities by 50%.**
- Successfully developed software to visualize payload temperature and pressure data, and created an IoT-enabled AR mobile app for real-time status monitoring. Accessible via ISRO's internal network using unique user credentials.

Robotics Instructor — September 2022 – October 2023
BrightChamps - Ed-Teach Company — *Karnataka, India*

- **Taught robotics** to international students aged 8 to 16 via online mode, delivering high-quality education and fostering a passion for technology.

Publications

Research Papers and Patent

- **Jay Goswami**, Vinay Patel, Mehfuza Holia, Ashish Thakkar (December 2023) *"Unity-Based Digital Twin for 3D Printers: Bridging the Gap Between Virtual and Physical Realities."* Presented at Women in Science and Technology International Conference.
- Jai G. Singla, **Jay Goswami**, Keivalya Pandya, Darshan K. Patel, Vinay Patel, Mehfuza Holia (June 2023) *"Application of Digital Twin in Space Engineering Using Augmented Reality and Internet of Things Technology."* Published in Current Science Journal (Indexed by Scopus).
- Design Patent (No: 356336-001) of *"IoT Enabled Smart Upper Prosthetic Limb"* Granted by Government of India.