Jaykumar Satishkumar Goswami

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SKILLS

Robotics	AMR and ASRS Development, Industrial-IoT, PLC, Industrial Automation, PID Control
Programming	C/C++, C#, Python, MATLAB, ROS, Linux
Mechanical Design	CAD modeling, Fusion 360, Creo, SolidWorks, LabVIEW, FEM analysis, Topology Optimization
Electronics	Circuit Design, Custom PCB Design, Sensors and Actuators, Micro-controllers, Embedded System, Motors and Solenoids
Prototyping	3D printing, 3D scanning, CNC machining
Digital Twin	Unity, AR/VR/XR, Real-time Data Visualization
Communication	Excellent English communication skills

WORK EXPERIENCE

Smart Manufacturing Lab - BVM

Junior Research Fellow (JRF) *Aug 2023 - Aug 2024, India*

- Designed and developed a 360kg capacity Automated Storage and Retrieval System (ASRS), ensuring industry-grade standards.
- Leading the development of an autonomous Mobile Robot (AMR), collaborating with industry experts to achieve commercial viability.
- Created an industry-grade smart manufacturing training kit with PLC, HMI, Gateway, and I/O link master, enabling advanced process monitoring and better control. Used Thingworx & Kepserver for IIoT capabilities.

The Robotics Lab - BVM

Research Assistant (RA) *Oct 2022 - Dec 2023, India*

- Worked on a 14 degrees of freedom (DoF) biped robot, simulating and replicating human walking patterns, including the design of custom PCBs for specialized DC motors with encoders.
- Implemented I2C protocol for efficient multi-controller communication, enhancing the coordination and functionality of the biped.

Ural Federal University (UrFU)

Summer Intern, Student Exchange Program *Jul 2023 - Jul 2023, Russia*

- Designed a bio-inspired robot gripper for industrial cake production, including FEM analysis and topology optimization, and reduced 40% of its weight while maintaining same performance.
- Simulated the assembly line using ABB Robot Studio, enhancing the efficiency and functionality of the production process.

Space Application Centre - ISRO

Researcher *Dec 2022 - Jun 2023, India*

- Built a digital twin model of a thermo-vacuum chamber and quantum payload using AR/VR and IoT technology.
- Successfully displayed real-time data on the digital twin, enhancing monitoring and analysis capabilities.

BrightChamps - Ed-Teach Company

Robotics Instructor *Sep 2022 - Oct 2023, India*

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

SUMMARY

Aspiring robotics hardware engineer with expertise in robotics, digital twins, electronics, and smart manufacturing. Skilled in designing and deploying advanced robotics systems, embedded systems, and custom PCBs. Experienced in control systems, and interdisciplinary collaboration.

EDUCATION

Northeastern University **Boston, USA**

(Pursuing) Master of Science in Robotics
Concentration: Electrical and Computer Eng.

Birla Vishvakarma Mahavidyalaya (BVM) **Gujarat, India**

Bachelor of Technology - Electronics Eng. (CGPA: 8.20/10)

PUBLICATIONS

- Jay Goswami, Vinay Patel, Mehfuza Holia, Ashish Thakkar (Dec 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 (Jun 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 of ***"IoT Enabled Smart Upper Prosthetic Limb"*** Granted by Government of India. Design No. : 356336-001 (Jan 2023)

EVENT SPEAKER

- Gave Expert Talk on "A Beginner's Guide to Robotics - Everything You Need to Know to Get Started" at the Cybosium, India's first ever IEEE RAS Technical Educational Program.