

John Twipraham Debbarma

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SUMMARY

Final-year B.Tech + M.Tech (Dual Degree) Computer Science undergraduate at IIT Gandhinagar, graduating 2027. Student Researcher at the CVIG Lab, working on diffusion-based image appearance transfer and layered image decomposition. Previously seven months of defence R&D at Solar Defence and Aerospace — GPR, SAR and LiDAR + mmWave radar for autonomous drones — ranked 1st in the internship batch. Interests: computer vision, machine learning, distributed systems.

EDUCATION

B.Tech + M.Tech (Dual Degree), Computer Science and Engineering

Indian Institute of Technology Gandhinagar | 2022 - Present | CPI: 8.12/10

Class XII — Physics, Chemistry, Mathematics, English, Geography

NVP English Medium H/S School | 2019 - 2021 | 93.6%

Class X

NVP English Medium H/S School | 2018 - 2019 | 87.2%

EXPERIENCE

Student Researcher, Computer Vision, Imaging and Graphics (CVIG) Lab

Indian Institute of Technology Gandhinagar | January 2026 - Present

Supervisor: Prof. Shanmuganathan Raman, Head of the CSE Department

- Working on image appearance transfer and layered image decomposition; extending it to 3D/4D computer vision.
- Running experiments on the institute's HPC Singularity cluster.

Research Associate (Software Engineer Intern)

R&D Division, UAV Department, Solar Defence and Aerospace Limited, Nagpur, India | May 2025 - December 2025 (7 months)

- Collaborated with multidisciplinary teams on confidential defence projects in a regulated environment.
- Developed a Ground Penetrating Radar (GPR) system for subsurface detection and mapping.
- Contributed to a Synthetic Aperture Radar (SAR) project for high-resolution imaging.
- Led a project from scratch integrating LiDAR and mmWave radar for real-time obstacle detection, avoidance and SLAM on autonomous defence drones in disaster and emergency response; owned cross-team integration.
- Gained expertise in defence-industry protocols, quality standards and documentation practices.
- Replaced a semester with industry experience; learnt QML from scratch and completed first project within a month.
- Ranked 1st in the batch: 11/10 in one performance quadrant for outstanding execution and impact, 10/10 in the other three (graded by IIT Gandhinagar professors); earned praise from the company.
- Named "Most popular person in the office" by my manager; strong communicator across teams.

PROJECTS

Distributed Storage and Compute Stack | March 2026 - Present

github.com/JohnTwiprahamDebbarma/distributed-storage-compute

- Built a Python + gRPC file system with a version-validated client cache and a custom encrypted TCP transport.
- Implemented Raft (leader election, log replication, snapshots) and primary-backup replication with failover.
- Reused Raft for a linearizable key-value store and a data-parallel ML trainer that resumes after a coordinator crash.
- Added a FastAPI REST API with ETag/If-Match concurrency, exactly-once retries and a live WebSocket status feed.

Human Activity Recognition System using Machine Learning | January 2024 - April 2024

github.com/JohnTwiprahamDebbarma/humanActivityRecognitionSystem

- Collected accelerometer data for walking, stairs up and down, lying, sitting and standing, on a OnePlus phone using Physics Toolbox Suite at 200 Hz, resampled to the 50 Hz UCI-HAR dataset.
- Used Butterworth and median filters; trained and tuned Decision Trees, reporting accuracy, confusion matrices, etc.
- Applied PCA to compress total-acceleration time series into two features, visualising distinct activity classes.

Sim Game | August 2023 - July 2024

github.com/JohnTwiprahamDebbarma/Sim-Game

- Developed game-theoretic strategy for Sim, a two-player game on K6 where forming a monochromatic triangle loses.
- Added a turn-order option (Red first or Blue second), with the computer adapting its strategy.

TECHNICAL SKILLS

Programming Languages: C++, C, Python, JavaScript, TypeScript, QML, MATLAB

Libraries and Frameworks: NumPy, SciPy, Pandas, Matplotlib, Seaborn, scikit-learn, PyTorch, TensorFlow, gRPC, FastAPI, WebSockets, GitHub Actions, React, Next.js, Tailwind CSS, Node.js, Vite, MDX, Framer Motion, Zustand, Zod, Radix UI

Robotics: ROS 1 (Noetic, Melodic), ROS 2 (Humble, Jazzy), RViz, Gazebo

Tools: Git, Linux, Docker, Google Cloud, Autodesk Fusion 360, Inventor, Arduino, Adobe Illustrator, Premiere Pro

ACHIEVEMENTS

- Ranked 1st in the Mathematical Olympiad (Regional), Tripura Mathematical Society, 2018. Certificate
- Recognised among the top 16 performers in the State Level Talent Search Examination, Tripura, India. Certificate
- Scored 10/10 in Japanese Language for Beginners course; the IIT professor recommended me on LinkedIn. Recommendation

LEADERSHIP AND ACTIVITIES

Team Captain, ES 117: World of Engineering, IIT Gandhinagar | May 2023 - July 2023

- Captained the team to the highest grade (10/10) in the course. Project repository
- Led a team of 29 members, one of 10 teams in the course, through effective oral and written communication.

Inter-IIT Cultural Meet 5.0 Contestant, hosted by IIT Madras | January 2023 - March 2023

- Represented IIT Gandhinagar: 4th among all IITs in Live Sketching. [Link to my Sketch](#)
- Background tabla musician in Dramatics; composed, adapted and synchronised music in a 35-member team.

Tabla: Sangeet Bivakar (Bachelor of Music; 8-year professional course), Bangiya Sangeet Parishad, 2018; secured 3rd position at State Level with 1st Division honours. Certificate

Painting: Ankan Bivakar (9-year professional course), Bangiya Sangeet Parishad, 2015; 1st Division honours. Certificate