# Sanjay Vijay

(978) 727-5370 | 27sanjayvijay@gmail.com | linkedin.com/in/sanjay-vijay | github.com/SanjayVijay27

## EDUCATION

**Purdue University**                                                                 Aug. 2024 - May 2027
**Bachelor of Science in Computer Science (GPA: 3.98)**                    *West Lafayette, IN*
- Concentration in Machine Intelligence, Concentration in Algorithms, Minor in Mathematics, Minor in Statistics
- Relevant Coursework: Competitive Programming, Data Structures and Algorithms, Artificial Intelligence

## EXPERIENCE

**Undergraduate Teaching Assistant**                                              Jan. 2026 - Present
**Purdue University**                                                                 *West Lafayette, IN*
- Supported 800+ students in CS18200: Foundations of Computer Science and CS21100: Competitive Programming I
- Led frequent office hours to improve student performance through guiding questions and sample problems
- Graded weekly assignments promptly with thorough feedback to encourage student improvement

**Undergraduate Researcher**                                                      Dec. 2025 - Present
**Cognitive Robot Autonomy and Learning (CoRAL) Lab**                      *West Lafayette, IN*
- Researched techniques for 3D mapping from images captured by robots in ultra-low-light environments
- Verified results from Gaussian Splatting, InstantSplat, and MASt3R algorithms, contributing to in-progress paper draft

**Algorithm Subteam Lead**                                                        Aug. 2024 - Present
**Purdue RoboMaster**                                                             *West Lafayette, IN*
- Led onboarding workshops to teach 30 incoming members computer vision, navigation, and ROS for competition
- Designed pipelines for image segmentation, automatic aim, and ballistic estimation, using OpenCV, ROS 2, and C++
- Enhanced Nav2 planners and controllers for autonomous LiDAR navigation, completely preventing obstacle collisions

**Software Engineering Intern**                                                   May 2025 - July 2025
**Draper**                                                                        *Cambridge, MA*
- Developed a post-mission analysis library for autonomous underwater vehicles (AUVs) used internally by 20 engineers
- Automated interactive visualizations of simulation and in-water data from AUVs, using Plotly, Dash, and C++
- Led transition of AUV data analysis utilities from MATLAB to Python, completely eliminating licensing costs

**Software Engineering Intern**                                                   June 2024 - Aug. 2024
**Draper**                                                                        *Cambridge, MA*
- Collaborated with 8 engineers using Agile methodologies to create and demonstrate teleoperated micro rover prototype
- Developed entire rover codebase with Python libraries to interface with I2C devices over Raspberry Pi 5 GPIO
- Developed tracking system with Kalman filters, Multiple Hypothesis Tracking, and Interacting Multiple Models (IMM)
- Researched sensor fusion literature to implement IMM with MATLAB, enabling robustness to shifting motion patterns

## PROJECTS

**Neurosphere**                                                                   Apr. 2025
- Collaborated to develop website that classifies and locates brain tumors from MRI scans uploaded by users
- Applied transfer learning to train a classification model using PyTorch, achieving 98% test accuracy
- Researched and implemented the Grad-CAM algorithm to locate tumors without position labels during training
- Won award for "Best Use of MongoDB" at HackTech, Caltech's annual hackathon with 400+ participants

## SKILLS

**Programming Languages** - Python, C/C++, Java, MATLAB, R
**AI & Robotics** - PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, ROS 2, Nav2
**Data Science** - NumPy, SciPy, Pandas, Matplotlib, Seaborn, Plotly, Dash
**Workflow & Development** - Agile, Kanban, Jira, Confluence, Notion, Git, Linux