N S Samyak Varma

Bachelor of Engineering- Computer Science and Engineering,
RV College of Engineering.

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My Portfolio Website

Education

- B.E in CSE, RV College of Engineering, Bengaluru, 9.75 CGPA — Batch of 2027
- PU, BASE PU, Rajajinagar, Bengaluru, 97.00% — May 2023
- Secondary school, Presidency School Nandini Layout-ICSE, 94.1 — May 2021

Projects

- **University Rover Challenge**: *Python, C++, ROS2, OpenCV, Embedded C, Websockets* — *March 2025*
  - Image processing – Mallet, Bottle detection, Aruco marker pose estimation, Stereo Camera(ZED2)
  - Navigation stack using ROS2, Rtab-SLAM
  - Communication system: transmitting video feed via network by websockets
- **ARES**: Autonomous Recon and Elimination System: : *Python, OpenCV, Embedded C, ROS2, 3D printing*
  - A 6 wheeled holonomic robot for autonomous 3D exploration, target detection, and mechanical engagement.
  - Built a ROS2 navigation stack with custom occupancy grid mapping, frontier detection, and Informed RRT* path planning.
  - Implemented stereo visual odometry on NVIDIA Jetson Orin NX (SLAM), connected via Raspberry Pi (for Wi-Fi) to ESP32 for control.
  - Wireless base station interface and full UI streaming in development.
  - Uses a rocker-suspension for stable outdoor traversal over uneven terrain.
  - Developed an automatic targeting and tracking system with mechanical actuation and firing via a stabilized 3DOF Stewart platform.
- **DeepFake detection**: *Python*, *Pytorch, Resnet50-transfer learning, OpenCV* — *October 2024*
  - Built with a custom model based on ResNet architecture.- Combines spatial and temporal analysis to classify the videos. Achieved accuracy of 93.7%.
- **M.A.R.C:** *Python, ROS2, OpenCV, faster whisper, Regex, Embedded C* — *February 2025*
  - An automated robotic arm that responds to the users needs via voice command.
  - Uses depth estimation instead of stereo Cam, hence cheaper to make
  - Object detection and classification allowing automated pick and place operations.
  - FOV-normalization to flatten the perspective distortions caused by non-perpendicular camera angles on top of the workspace.
  - Universal software, allowing different arms to be controlled with same software, only URDF varies.
- **Device Discovery and threat detection**: in collaboration with Juniper Networks. — *Ongoing*
  - Single script that performs device discovery, detects communication protocols, OS used, Domains in communication.
  - An autoencoder model that detects anomalies in behaviour of the OT devices.
- Miscellaneous:
  - Certified in introductory ECL, HPCC Systems - Lexis Nexis, *ECL* — *February 2024*
  - NSS-RVCE's website: *NextJS*
  - Team Astra Robotics, RVCE website: *NextJS*
  - Ant colony simulation: *pygame*
  - Centralised Medical database: *C++ with GUI, SQL, encryption with cyphers*

Skills

- Programming Languages, libraries: Python, C++ , JS, SQL, MATLAB, Embedded C, ECL, ROS2, OpenCV, , TensorFlow, Pytorch, Pygame.
- Tools and Technologies: Microcontrollers, SolidWorks, Blender, Unity, clustered cloud computing
- Soft Skills: good communication, leadership, teamwork and collaboration
- Languages: English, Kannada, Hindi, Tulu

Achievements

- 2nd Place Almatron hackathon, DSATM, 2024
- 2nd Place ECL Hackathon by HPCC-LexisNexis, RVCE, 2024

Memberships

- Team Astra robotics, RVCE — *October 2023 - Present*
- Core- Coordinator NSS, RVCE — *November 2024 – Present*
- Heading 3D modelling vertical, Sattva, RVCE — *April 2024 - present*