Varun Ganjigunte Prakash

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EDUCATION

Bachelor of Engineering in Electronics and Communication *August 2014 – May 2018*
Sri Jayachamarajendra College of Engineering *Mysuru, India*
CGPA: 8.47/10.0

Pre-University *June 2012 – May 2014*
Sadvidya Composite Pre–University College *Mysuru, India*
Aggregate: 96.5%

Secondary School *June 2011 – May 2012*
Sadvidya High School *Mysuru, India*
Aggregate: 96.8%

WORK EXPERIENCE

Machine Learning Engineer – Computer Vision *March 2021 – Present*
CogniAble *Bengaluru, India*

- Developed solutions for action recognition on custom clinical dataset.
- Built and tested machine learning models on recommender systems, object detectors and trackers, spatial and temporal action recognition deep neural networks to analyze children behavioral videos, implemented classifiers for Autistic and Neurotypical developmental behaviors.
- Led and managed computer vision model development in production. Implemented training and model inference pipelines.
- Researched and implemented novel approaches for clinical diagnosis in computer vision.

Engineer *June 2018 – March 2021*
L&T Technology Services *Bengaluru, India*

- I explored new facets in subsets of Artificial Intelligence to establish strong customer relationship from ideation to realization. Developed three computer vision based software applications for edge inference products for leading AI and Semiconductor customers. Proposed improvements on existing Computer Vision frameworks. I took ownership and was part of many AI based initiatives in Semiconductor business unit.
- Part of software development for a medical product in Lua and C++. Developed OCR pipeline for automation pipeline for HMI screen in Python.
- Worked on few deep learning applications and showed performance improvement using OpenVINO toolkit to customers. I also got many opportunities to teach engineers about deep learning for computer vision.
- Process Automation (2018 - June 2019): Improved business processes with automation. Automated most simple and repetitive tasks. Collaborated to help teams find solutions to a problem and simplify them with automation. I stood out as the only one among hundreds in the Transportation business unit, ready to automate almost anything to speed up process with open-source tools. Few scripts I wrote reduced hours of manual work into minutes (10x faster). Some implementations were fruitful and learnt lessons from the rest.

Computer Vision Intern *February 2018 – May 2018*
Skylark Drones *Bengaluru, India*

- Researched and developed tools for aerial image overlap checker to account for terrain variation problem for drones.

Embedded Systems And Wireless Network Intern *June 2016 – December 2016*
LogicHive Solutions *Mysuru, India*

- Worked on various projects that involve multifarious sensors to implement practical applications with Ethernet, Bluetooth, WiFi and other networking principles. Some of the projects included the design of applications for GPS Geo-fencing with ZigBee, robot control, RF communication, Electronic weighing scale for liquid measurements.

PROJECTS

6–DOF pose estimation, planning and control | *ROS, Gazebo, TensorFlow*

- Developed a custom 4–axis robotic arm. Implemented and simulated in ROS. Tested custom built manipulator for 3D object grasp with deep learning.

Indian currency recognition and food classifier application | *TensorFlow (Keras), Python, Android*

- Developed mobile application of Cash Recognition for Indian currencies.
- Developed a Food classifier mobile application which identifies and discovers related information about the food such as nearest restaurants where it is available, the item cost etc., on the click of a photo, for 20 most common Indian food items.

Dexterous Service Robot | *ROS, Python* ***Advances in Robotics, ACM ICPS 2019***

- The purpose of our project is to build a home assistant robot to assist differently-able and aged persons. The proposed robot helps such people by performing some of the common tasks involved in our daily life through human-machine cognitive learning. A 5 DOF Dexter ER-2 arm mounted on a vehicle was operated by voice commands to selectively search and deliver the article required by the user. Simulation was also performed to check the feasibility of the planned path for arm's joints and to avoid a collision in a dynamic 3D environment.

Color based object sorting using DEXTER ER-2 | *MATLAB*

- Sorted objects based on color by using a heavy duty robotic arm (DEXTER ER-2). The algorithm used Image Processing and Inverse Kinematics concepts. Colored objects of different sizes were also sorted.

Autonomous object delivery robot | *AVR Studio and Python*

- The project aimed at selective object delivery based on shape, size, and color of the objects. Objects and surrounding obstacles were analyzed by using Image Processing concepts programmed in OpenCVPython. Fire Bird V robot was navigated using XBee wireless communication. A robotic gripper has been designed to pick and deliver objects. This project helped to understand and improve upon the autonomous delivery robot system which was efficient and self-reliant.

Other | *V-REP, Autodesk Fusion 360, Python, MATLAB*

- **Biomorphic Hyper–redundant Snake robot** (Oct 2017 – Jan 2018): The aim of this project was to build a robot resembling a snake. The different gaits of a biological snake such as serpentine, caterpillar and side-winding motion were studied and simulated in V–REP (now CoppeliaSim). The body of the snake was designed in Autodesk Fusion 360. This project was a part of e–Yantra robotics competition–2018.
- A group project on Smart Solar Battery Charger, this was a battery charging system whose output power is controlled by monitoring the status of the battery. The system also includes a protection mechanism against over-current in cases of bright ambiance.
- A group project work on Patient Registration System for healthcare units.
- Designed a transmitter and receiver with encrypted communication system using Morse code.

PUBLICATIONS

- "Autonomous Service Robot", Arshad Javeed, Varun Ganjigunte Prakash, Sudarshan Patilkulkarni, *Advances in Robotics (AIR 2019) – ACM ICPS, 2019*

TECHNICAL SKILLS

Languages:	Python, C++, MATLAB, C, Embedded C
Hardwares:	Jetson Nano, Raspberry Pi, Custom mobile robots, Custom 4 axis robotic arms
Libraries and Tools:	OpenCV, Keras, TensorFlow, scikit-learn, PyTorch, ROS, OpenAI Gym, Git

ACCOLADES

- Completed **DELF B1** (Advanced) Certification for Diploma in French Language administered by International Centre for French Studies for France's Ministry of Education.
- Worked as *Omdena* collaborator (ML Engineer) to solve renewable energy AI challenge for African communities.
- Received certificate of participation for implementation of a theme 'Launch a Module' in e-Yantra Robotics Competition 2016.
- Received certificate of participation/appreciation in Anveshan Fellowship 2018 of Analog Devices India for designing, developing and proposing our project "Dexterous Service Robot" among top 7 finalists in India. The competition involves full-fledged product development in 6 months that can uplift the standard of living of our society.
- Presented a technical paper entitled "Colour based Object Sorting Robotic arm using Image Processing" in *National Conference on Robotics, Automation, Control and Embedded Sytems (NCRACES-2017).*

LEADERSHIP

- Led a team for e-Yantra Robotics Competition 2017 and other robotics projects at e-Yantra Robotics Lab at Sri Jayachamarajendra College of Engineering.
- Volunteered to teach children at U&I charitable organization. Received *Best Teacher of the Year 2019-20* recognition.
- Volunteered in technical activities of IEEE-SJCE student branch at Sri Jayachamarajendra College of Engineering for 2015-2018.

LANGUAGES

- French (fluent – B1), English (fluent), Kannada (native), Hindi (Beginner)