

Gunjan Khut

Boston, Massachusetts - 02135 | (+1) 332-201-9279 | gunjan.khut92@gmail.com | [LinkedIn - gunjankhut](#)

Education:

University of Maryland, College Park	M. Eng. in Robotics (GPA – 3.77/4.0)	Dec 2019
NMIMS (NGA-SCE), Mumbai	PG Diploma in Business Management	Dec 2017
North Maharashtra University, India	B.Eng. in Electronics & Telecom (72.60% - Class rank 25/174)	Jun 2014
K J Somaiya Polytechnic, Mumbai	Diploma in Industrial Electronics (58.25%)	Jun 2011

Skills:

Tools and Software: C++, Python, MATLAB, SIMULINK, ROS, Keras, PyTorch, OpenCV, TensorFlow, Algorithms, Arduino, Ladder Programming, UML, SQL server, Git, and Microsoft Office (Word, Excel, Powerpoint)

Robotic Frameworks: ROS, Gazebo, URDF, Rviz, MoveIt, OMPL and Vrep.

Work Experience:

Software Engineer Intern, digiBlitz Inc

Feb 2020 - Present

- Train and validate various Deep Neural Network implemented in Tensorflow with large scale sample data & collaborate with the team on systems integrations.
- Build and implement connectivity for correlation and interoperability of experimental data. Design & Blueprint Mechanical Robotic Parts.
- Develop C/C++ and Python applications for Robot Control and Device controllers

Research Assistant, University of Maryland, College Park

May 2018 - Dec 2019

- Used Pandas, NumPy, SciPy, Matplotlib, and Sci-kit learn for developing various Machine learning algorithms.
- Participated in phases of Data mining, Data-Collection, Data-Cleaning, Developing-Models, Validation, and Visualization.
- Worked independently and collaboratively throughout the project lifecycle including data extraction/preparation, design, and implementation of machine learning analysis and solutions, and documentation of results.
- Implemented Supervised and Unsupervised Machine Learning algorithms using Microsoft Azure cloud services to perform detailed analytics and building Web Services models.
- Updated Python scripts to match training data with our database stored in AWS cloud Search, so that we would be able to assign each document a response label for further classification.
- Used AWS, Azure ML, and other cloud concepts with tensorflow framework to train deep learning models.

Automation Engineer, P. G. Drive, Mumbai, India

July 2015 - Dec 2017

- Commissioned 4 projects, coordinating teams of local engineers to ensure projects delivered on time and budget.
- Led control aspect of each program through design selection and programming of PLC and safety control, integration, robot programming, VFD and servo configuration and HMI development.
- R&D activities for implementation of new technologies (Additive manufacturing, IoT, Cloud integration) to reduce complexity, cost and aid in serviceability.
- Software task such as loading of operating system & application software, I/O Database generation, Software module configuration, Flowchart / Write-up translation to configuration.
- System engineering including Digital I/O points assignments, BOM preparation & Hardware Integration.
- Complete Site co-ordination with Main & Sub-Contractor by discussions, meetings & preparation of documents in specific formats & approval from customer.
- Introduced Lean manufacturing principles to streamline work processes including 5S concepts for the workshop layout and FMEA processes for iterative design improvements.

System Engineer, JK & PC Texlab, Mumbai, India

Jun 2014 - Jun 2015

- Designed intuitive graphical user interfaces using knowledge of serial communications and database design
- Wrote many programs using Labview to functionally test and control engineering and manufacturing products.
- Consulted regularly with customers on project status and technical issues.
- Prepared detailed reports concerning project specifications and activities.
- Worked with cross organizational teams to successfully complete contracts.

Gunjan Khut

Boston, Massachusetts - 02135 | (+1) 332-201-9279 | gunjan.khut92@gmail.com | [LinkedIn - gunjankhut](#)

Robotics Coursework:

Planning, Perception, modelling and controls for Autonomous Robots, Robot Learning, Machine Learning, AI & Deep Learning, Planetary Surface Robotics, Software development for Robotics, Manufacturing & Automation, Wireless & Mobile Systems for the IoT.

Projects:

Classification of MNIST using Deep Neural Network in Keras

Oct 2019

- Built a Deep Neural Network and Convolutional Neural Network to classify the MNIST Dataset in Keras. Achieved a test accuracy of 99.02% with CNN in comparison to 92.56% with Deep Neural Network.

Autonomous navigation and mapping in an unknown environment on AGV

July 2019

- The developed system featured navigation of TurtleBot in an unknown environment. (LiDAR, SLAM, A* & RRT)
- Robust in avoiding obstacles, simultaneously mapping the environment, stop or resume its motion as per user command & change the threshold distance to detect obstacles.

Design, build and fly a quadrotor to compete in the VFS - Annual MAV Challenge

Aug 2019

- Working on object detection - involves training a deep neural network using transfer learning, data augmentation & parameter tuning

Deep Reinforcement Learning for Simulated Self Driving Car

May 2019

- A car model developed in Graphical interface and enabled it to travel from one point to another in a rectangular map using Deep Q learning. Avoided collision while moving in the simulation environment.

Kinematics of Stewart Platform – Computation, Validation & Simulation

Dec 2018

- Implemented & Verified the forward & Inverse kinematics of Stewart platform and simulated its movements in MATLAB.

Emergency Vehicle Detection using Tensorflow API (Winner of Northrop Grumman Challenge)

Nov 2018

- Worked on an emergency vehicle detection system in low visibility conditions, detected vehicles with accuracy of more than 85% on images/videos using transfer learning and faster RCNN model.
- Involved selection of appropriate CNN model selection and data augmentation.

ARIAC (Agile Robotics for Industrial Automation Competition)

May 2018

- Established control between collaborative robots (6 DOF - UR10 and AGV) to fulfil the orders given to the competition environment and moved parts from assembly bins to AGV's. MoveIt & Gazebo are the ROS plugins used.
- Improvised the system by adding contingencies for Part Drop and Important Order First. (C++, ROS)

Planning and Perception for Autonomous Robots

May 2018

- Implemented traffic sign detection and classification using SVM, MSER features and HOG features.
- Implemented lane detection for straight and curved lanes by using edge detection and perspective transforms.
- Actively carried out object recognition and tracking for a moving vehicle.
- Visual odometry for a car moving around a block using feature extraction and manipulating fundamental matrix.
- Incorporated differential constraints with A-star algorithm and implemented the algorithm on TurtleBot.

SunGanak – A solar tool

Oct 2017

- A data science powered web-software giving a generation report of various parameter such as Return on Investment (ROI), carbon footprints, estimated generation of a solar PV Plant.

Additional Skills:

Tools: Latex, Solidworks, Inventor, PVsyst, AutoCAD, 3D Printers.

Industrial Automation expertise: PLC Hardware (Allen Bradley, Siemens, ABB, GE-Fanuc, Delta), SCADA (ifix, WinCC, Vijeo Citect & Wonderware Intouch), HMI and VFDs (for motor control)

Communication Buses: Ethernet, Modbus serial/TCP-IP, CAN, OPC, BSAP, EtherCAT, SPI, I2C, RS232, USB.

Solar expertise: Plant designing, Installing, commissioning, troubleshooting, setting up system monitoring.