Gunjan Khut

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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
SMEC Automation Pvt. Ltd., Mumbai	**PG Diploma in Industrial Automation**	Oct 2015
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, SysML, SQL server, Git, Latex, Solidworks, Inventor, PVsyst, AutoCAD, 3D Printers, and Microsoft Office (Word, Excel, Powerpoint)

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

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.

Work Experience:

IoT Machine design Intern, digiBlitz Inc **Feb 2020 - Present**

- To Train and validate various Deep Neural Network implemented in Tensorflow with large scale sample data & collaborate with the software team on systems integrations.
- Build and implement connectivity for correlation and interoperability of experimental data. Also, work on NBIoT, Wi-Fi, BLE, LoraNet networks. 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.
- Designs and seeks agreement on the scope of the entire Configuration Management processes, including identifying and documenting the items to be controlled and the information to be captured and recorded
- Responsibility included the full SDLC management for designing, analyzing, developing, testing, Implementation and application support
- Devised a machine learning algorithm using Python for facial recognition and machine vision applications.
- 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**

- Performed testing, commissioning, troubleshooting and maintenance of electrical panels, PLC systems, VFD, and HMIs for various field operation projects.
- Developed control logic, AutoCAD drawings, Technical specification documents, power & control wiring, specifications and inspection of low-medium power electrical equipment: switchgears, transformers, motor testing.
- Software Engineering that includes loading of operating system & application software, I/O Database generation, Software module configuration, Display Building, Flowchart / Write-up translation to configuration, Report writers.

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- System engineering including Digital I/O points assignments, Cabinet Engineering, BOM preparation, Field Cable terminations, wiring diagrams, layouts & sketches documentation & Hardware Integration.
- Complete Site co-ordination with Main & Sub-Contractor by discussions, meetings & preparation of documents in specific formats & approval from customer.
- Upgraded a manual gear testing machine to a retrofitted automatic machine; developed control logic, control panel, sensor integration and calibration. (Allen Bradley PLC)
- Master system database compilation, creation & modification of HMI screens, writing interlock logics, generation of on demand & scheduled reports.
- Acted as a lead engineer for numerous field operational projects, developing PLC-SCADA (Allen Bradley, ABB) system to monitor a sewage water system (juhu plant, BMC Mumbai) which had 12 submerged pumps and 4 diesel generators operated as per the requirement. Performed system analysis to successfully manage it from design through to commission stage, also provided after sales and maintenance support.
- Responsible for electrical control panel design, PLC programming and implementation/commissioning for complex solutions involving a combination of IT networking and automation components.

Maintenance Engineer, JK &PC Textlab Equipments, Mumbai, India **Jun 2014 - Jun 2015**

- Installed lab equipments - including complex and advanced machinery for clothing yarns.
- Updated the technical documentation database and performed analysis to find the innovations.
- Continued the enhancement of product portfolio by working on a special project for beaker dyeing machine.
- Diagnosed and troubleshoot the systems & Engineered tactical solutions for improving machine efficiency.
- Calibrated and performed Factory acceptance tests for the instruments.

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:

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.

MBSE Approach to the Process Assessment of an Engine Block **May 2019**

- Conducted a sustainability assessment using MBSE approach and Provided suggestions based on time, energy and material analysis, to improve the efficacy of the current manufacturing processes and adapt additive manufacturing techniques.
- Detailed process improvement measures using Industry 4.0 infrastructure. Techniques involved - Data analysis and processing with IoT for predictive analysis, PLC-RFID systems for quality monitoring, AGV utilization for flexible manufacturing setup.

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) **Jan 2018 – 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)