

Gunjan Khut

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Education:

NEC, NH
University of Maryland, College Park
NMIMS (NGA-SCE), Mumbai
SMEC Automation Pvt. Ltd., India
North Maharashtra University, India
K J Somaiya Polytechnic, India

MS. in Data Science & Analytics
M. Eng. in Robotics
MBA in Business Management
T. Diploma in Industrial Automation
B. Eng. in Electronics & Telecommunications
T. Diploma in Industrial Electronics

Skills:

Tools and Software: C++, Python, MATLAB, SQL, ROS, Keras, PyTorch, OpenCV, TensorFlow, Algorithms, Arduino, Ladder Programming, Spotfire, Git, Latex, Solidworks, AutoCAD, and Microsoft Office (Word, Excel, Powerpoint)

Industrial Automation expertise: PLC Hardware (Allen Bradley, Siemens, ABB, GE-Fanuc, Delta), SCADA (ifix, WinCC, Vijeo Citect & Wonderware Intouch), Cognex & Keyence sensor systems, IT/OT Network integration, HMI and VFDs.

Work Experience:

Senior Controls Engineer, Insulet Corporation, Acton - MA

Jul 2020 - Present

- Led the implementation of assembly and process equipment, AGVs, and Robots to optimize Manufacturing Operations.
- Designed and programmed controls infrastructure, including PLCs programming, Vision systems, HMIs, Keyence and Cognex machine vision systems, database management, and motion control drives (VFD and servo drives).
- Programmed various Robots for accurate and precise pick-place operations with auto learning features (ABB and Fanuc)
- Led the development of Robotic systems: IO device & component selection, power distribution & Network architectures, detailed electrical schematics, & comprehensive documentation of sequence of operation and functional requirements.
- Performed statistical analysis, predictive modeling, generate automated reporting to create data catalog.
- Developed computer vision algorithms: real-time object recognition and tracking, camera calibration, 3D reconstruction.
- Conducted data analysis, feasibility studies, and process improvements using data science tools and self-created programs & Collaborated with data engineering for documentation and implementation of analytics tools.
- Collaborated on and reviewed wiring diagrams and logic for new equipment, field retrofits, and upgrades to ensure high reliability of equipment, including lasers, optical gaging devices, continuity testing, and inspection.
- Improved process efficiency in assigned areas by analyzing equipment maintenance history, identifying waste causes, developing root-cause solutions, and providing maintenance assistance as needed.

Business Intelligence Developer, Sylger Corporation, Washington, DC

Jun 2020 - Sep 2020

- Developed scalable ML solutions for CSOSA (Court Services and Offender Supervision Agency) throughout the entire project lifecycle, including data extraction/preparation, result documentation on Azure Big Data platforms. Processed and analyzed a dataset of 50M offender records, achieving accuracy of 98%, resulting in improved model performance.

Software Engineer Intern, digiBlitz, Herndon Virginia

Feb 2020 - Jun 2020

- Conducted large-scale data training and validation for various DNNs implemented in TensorFlow. Handling datasets of over 100,000 samples with an accuracy enhancement of 15% on average.
- Designed and programmed robotic arms, resulting in a 25% increased precision on robot control and device controllers.

Research Assistant, University of Maryland, College Park

May 2018 - Dec 2019

- Led the development of scalable ML solutions, including a facial recognition, achieving a recognition accuracy of 92% .
- Designed and executed various SQL queries and functions, meeting demands with a 98% accuracy rate in query results.
- Implemented ML algorithms using Azure for detailed analytics, resulting in a 75% improvement in model performance.
- Updated Python scripts to match training data with the AWS cloud Search database for document classification.

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

July 2015 - Dec 2017

- Performed testing, commissioning, and maintenance of electrical panels, PLCs, VFDs, and HMIs for various projects.
- Innovated and upgraded a manual solar tracker to a sensor-based model for automation.
- Developed control logic, AutoCAD drawings, Technical specification documents, power & control wiring, specifications, and inspection of low-medium power electrical equipment: switchgears, transformers, motor testing.
- Led various field operational projects from design through commissioning, providing after-sales and technical support.
- Designed electrical control panels and successfully commissioned complex solutions involving IT networking and automation components, yielded a 20% enhancement in production efficiency and reduction in manual intervention.
- Prepared instruments data sheet, flow charts, BOM, Erection bill of material based on the cost-effective solutions.

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Maintenance Engineer, JK &PC Textlab Equipments, Mumbai, India

Jun 2014 - Jun 2015

- Installed 15 complex and advanced machinery for clothing yarns, resulting in a 40% increase in production capacity.
- Updated the technical documentation database and performed analysis to find 6 process innovations.
- Contributed to the enhancement of product portfolio by working on 2 special projects for beaker dyeing machine.
- Diagnosed and troubleshooted system errors, implemented tactical solutions to improve machine efficiency by 15%.
- Calibrated and performed FAT for the instruments, ensuring quality standards and a 100% passing rate.

Electronics Engineer, Speed Control Industries, Mumbai, India

Jun 2012 - Jun 2014

- Configured module softwares, generated I/O Databases, and translated flowcharts and write-ups to configurations.
- Engaged in system engineering, including designing PCBs, IoT integration, assigning Digital I/O points, preparing BOMs, and wiring diagrams, Prepared comprehensive documentation which reduced troubleshooting time by 60%.
- Coordinated with contractors and customers during site visits, meetings, and document preparation for successful project implementation with 95% customer satisfaction rate.

Projects:

Path Planning Algorithm (RRT) on AGV

- Planning routes and navigating obstacles using LiDAR from a start point to end point in a known simulated environment.
- Used g-mapping technique using SLAM and developed a binary map of the environment to feed to the RRT algorithm.

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

- Worked on an emergency vehicle detection system in low visibility conditions, detected vehicles with accuracy of more than 92% on images/videos using transfer learning and faster RCNN model.
- Involved selection of appropriate CNN model selection and data augmentation.

TurtleBot walker

- Implemented walker algorithm. The robot moves straight until it comes near to the obstacle then, it rotates on its place until the way ahead is clear. Used laser scan published data to check for obstruction in its path to avoid it.

A* path planning for a differential drive robot

- Used A* algorithm to find path between two points in a 2D space, obtained C-Space map from gmap, by extracting from the provided rrlab.sdf file then converted to a .png file; the map was processed with OpenCV, setting 1's as obstacles and 0's as free space, and the robot's known radius was used to pad 1's around obstacles for point robot consideration.

ARIAC (Agile Robotics for Industrial Automation Competition)

- Established control between collaborative robots (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)

SunGanak – A solar tool

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

GPS Vault with Fingerprint Scanner & Keypad Lock (Winner of Best innovative project)

- Engineered a sequential multi-layered security vault that was operational only when it fulfills the following security combinations: Coordinate specific location, Biometric recognition, Encrypted 4-digit pin.