

Numair Ahmed

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Education

Northwestern University – Evanston, IL | Master of Science

Robotics, Sept 2020 – March 2022

University of California, Davis – Davis, CA | Bachelor of Science

Mechanical Engineering, June 2015

Graduate Research Projects

PREDICTIVE MACHINE DIAGNOSTICS | 3/2021 to Present

Northwestern University

- Machine Learning: Building synthetic image dataset of 40,000 pairs of image samples and training auto-encoder model comprised of CNN layers & feature extraction to improve on 92% prediction accuracy
- Built dataset of 100,000 vibration data samples using custom sensor instrumentation, and training feed-forward NN models in PyTorch to achieve 62%+ failure prediction accuracy.
- Involved data cleaning and analysis of test/QA data; deriving pattern in machine sensor data

Work Experience

MECHANICAL DESIGN ENGINEER, CONSULTANT | 9/2020 to 3/2021

Facebook Oculus – Menlo Park, CA

- Leading precision mechanical design of metrology equipment at Asian vendors. Translating system performance requirements to mechanical design specifications
- Drive HW and SW integration of fixtures to ensure performance requirements are met for different use cases; equipment design for research application versus design for production environment.

MECHANICAL DESIGN ENGINEER | 12/2018 to 9/2020

KLA - Milpitas, CA

- Solved QA bottlenecks using Python and physics knowledge of electromechanical systems, saving 2 weeks of manufacturing cycle time per build cycle (equivalent of ~\$150,000 per build cycle)
- Precision design of machines for semiconductor inspection equipment and camera alignment systems

SYSTEMS ENGINEER, ROBOTICS | 08/2016 to 12/2018

KLA - Milpitas, CA

- Systems engineer for metrology and semiconductor automation equipment
- Improved manufacturing cycle times (by 9 days) using Python to conduct statistical study of failure data

Skills

Programming: Linux, Python (NumPy, Pandas, Matplotlib), C++ 11, computer vision, SQL, postgresQL, machine learning in PyTorch, ETL pipelines, data analysis, Google Cloud Platform (GCP), git, MATLAB

Robotic Techniques: signal processing, robotic OS (rOS), Kalman filter, UKF, Information filter, Particle filter, D-star (D*) search, Sensor fusion. Probability models for robotic state estimation

Modeling Software: Gazebo, rViz, moveit, simulation in RUDF and XACRO to mechanical design of robot, LIDAR projects, vibrations modeling, ANSYS Finite Element Analysis, OROS analyzer, NX CAD, Creo CAD