Abhijeet Ainapure

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SUMMARY

Graduate student in Mechanical Engineering seeking an internship in Machine Learning, Data Analytics or Reliability Engineering/Predictive Maintenance.

EDUCATION

Master of Science in Mechanical Engineering – GPA: 3.9/4.0 *Expected December 2020*

University of Cincinnati, Cincinnati, OH

Graduate Research Advisor: Dr. Jay Lee

Relevant Coursework: Industrial Big Data Analytics & Applications, Intelligent Systems, Decision Engineering, Reliability Engineering & Design, Applied Statistics, Applied Fast Fourier Transform, Mechatronics, Advanced Design for Manufacturing.

Bachelor of Engineering in Mechanical Engineering – GPA: 3.8/4.0 *June 2017*

Savitribai Phule Pune University (University of Pune), India

Online Courses & Certifications: Machine Learning (CS229, Stanford University), Machine Learning (CS391L, University of Texas at Austin), Deep Learning (CS230, Stanford University), Convolutional Neural Networks for Visual Recognition (CS231n, Stanford University)

TECHNICAL SKILLS

Softwares: **CATIA, SolidWorks, Pro-E/ Creo Parametric, ANSYS, AutoCAD, MasterCAM, Microsoft Office**

Programming Languages: **MATLAB, Python, R, LabVIEW, C, C#** | Deep Learning Frameworks: **Keras, TensorFlow, Theano**

INTERNSHIPS AND RESEARCH EXPERIENCE

Graduate Research Assistant *July 2019 – Present*

NSF I/UCRC for Intelligent Maintenance Systems, University of Cincinnati

- Conducted in-depth research in the area of machine learning, deep learning and industrial artificial intelligence.
- Implemented numerous machine learning approaches on industrial data sets from companies such as AU Optronics, for fault detection and diagnosis, health assessment and remaining useful life prediction.
- Applied various deep learning algorithms along with cross-domain adaptation techniques on industrial datasets, to develop more practical & accurate solutions for fault diagnosis.

Graduate Apprentice Trainee *July 2017 – Dec 2017*

Thermax Ltd. India

- Executed different industrial projects in the 'Boilers and Heaters Department', related to optimization of boiler performance.
- Collected data for boiler performance degradation under various operating conditions for health assessment of boiler.
- Performed data analysis in MATLAB using ML algorithms, to schedule timely boiler maintenance and prevent costly failures.

Undergraduate Intern *Sept 2015 – Dec 2015*

Toyota Motors Ltd. India

- Studied in detail the innovative engine and exhaust automobile systems such as, the EGR system, used by Toyota Motors.
- Collected data for different car models using appropriate sensors & analyzed this data for pattern recognition.
- Optimized the design of their selective catalytic reducers, mainly focusing on their material, to control the engine emissions.

RESEARCH PROJECTS

Health Assessment of Industrial Gearbox by Eccentric Gear Detection *Jan 2019 – Apr 2019*

Course: Industrial Big Data Analytics & Applications, University of Cincinnati

- Performed data cleaning and time synchronous averaging on raw accelerometer data followed by data segmentation based on the speed regimes of gearbox.
- Executed statistical time & frequency domain analysis on segmented data for feature extraction & model building.

- Applied various supervised learning classification algorithms like PCA-T2, Self-Organizing Maps, Support Vector Machine & Neural Networks, to achieve 100 % accuracy in eccentric gear detection.

A Study of Fault Diagnosis and Classification in Rolling Element Bearings *Sept 2018 – Dec 2018*

NSF I/UCRC for Intelligent Maintenance Systems, University of Cincinnati

- Conducted an in-depth study of Industry 4.0 architecture and Cyber-Physical Systems (CPS) in manufacturing industry.
- Tested different data analysis & dimensionality reduction algorithms such as Support Vector Machine, Self-Organizing Maps, Random Forest, Principal Component Analysis on the Case Western Reserve University Data Set using MATLAB.
- Developed a generic neural network model in Python, for fault diagnosis of bearings, by testing numerous deep learning approaches involving CNN, LSTM & DBN.

Kalman Filter as an Optimization Tool for selection of ATV gearbox reduction ratio *Sept 2018 – Dec 2018*

Course: Decision Engineering, University of Cincinnati

- Collected & preprocessed the tachometer data obtained from the gearbox of an ATV used in BAJA SAE.
- Studied in detail various optimization methods like Bayesian Analysis, Kalman filter, Probabilistic Modeling etc.
- Based on the study, developed a Kalman Filter algorithm in MATLAB, for calculating optimized reduction ratio.

Design, Analysis and Optimization of Bearing Mounting and Dismounting Tool *June 2016 – May 2017*

Atlas Copco India Ltd.

- Led a team of 4 members to successfully design and analyze a mounting tool for bearings used in screw compressors.
- Optimized the tool by reducing its weight, cycle time and operating cost, using metallurgical and manufacturing concepts.
- Designed and analyzed a dismounting tool for efficient dismounting of bearings, to improve their service life.
- Presented a seminar on this topic and was awarded as the best project in the Mechanical Engineering department.

EXTRA-CURRICULAR & VOLUNTEER EXPERIENCE

Member of International Partners and Leaders (IPALs), University of Cincinnati *May 2019 - Present*

- Helped to organize and successfully execute social & educational events for domestic & international students at the university.

Member of University of Cincinnati Mountaineering Club (UCMC) *May 2019 - Present*

- Helped to organize different in-state as well as out-of-state trekking and camping trips for university students.

Member of Seva Sahayog Foundation, India *July 2017 - Present*

- This NGO helps educate women & children and conducts health & environmental awareness programs throughout the year.
