

# Ajay Vignesh

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## Summary

Graduated Mechanical engineer specialized in Machine Learning currently working as a Trainee Engineer at Advanced Manufacturing Technology Development Centre (Centre of Excellence for Machine Tools) at IIT-Madras set up by Government of India.

Areas of Expertise:

Machine Learning, Deep Learning, Industry 4.0, Smart Manufacturing, Signal Processing, Condition Monitoring & Fault Diagnostics, CAD (Solidworks & Creo).

## Experience

### Trainee Engineer

Advanced Manufacturing Technology Development Centre, IIT-Madras

Nov 2018 - Present (1 year 8 months +)

Working with Industrial ( Research & Development Engineers ) & Academia ( Professors ) experts to developing an Industry 4.0 Manufacturing Solutions to the Machine tool area particularly in Grinding.

The intent is to bring the science of grinding actively for shop floor manufacturing with the help of Machine Learning, Signal Processing techniques & further integrate it with Rule-based algorithms and Big Data Analysis.

Responsibilities & Gained Knowledge :

- \* The data collected from the manufacturing line machines are analyzed using Python.
- \* Developed a Machine Learning model for predicting the critical grinding parameters using traditional & modern machine learning methods.
- \* Developed an Industry 4.0 Manufacturing Mobile Application using Appsheet Platform & Knowledge of developing a Software Architecture (Unified Modelling Language).
- \* Knowledge of integrating sensors to the machines & analyzed the signals using signal processing methods for finding the condition of the machines (Condition Monitoring) & the process.
- \* Knowledge of diagnosing the faults using Failure Mode Effect Criticality Analysis (FMECA).
- \* Knowledge of System thinking approach for problem-solving.

### Research Intern

Indian Institute of Technology, Madras

Jun 2018 - Aug 2018 (3 months)

Worked in an Identification of resonance frequency in the envelope analysis project under Dr.Piyush Shakya.

Core Responsibilities :

- 1.Literature Survey
- 2.Optimization techniques & algorithm development.
- 3.Natural Inspired Technique Algorithm development.

Key outcome :

Applied for journal under the topic titled "An alternative approach for automatic identification of resonance frequency for rolling element bearing diagnosis".

### Engineer Intern

Team Shunya, IIT Bombay

May 2017 - Jun 2017 (2 months)

Project Topic: Design of Dehumidifier

Project Objective: The main motive of the project is to design and manufacturing a dehumidifier that works on solar-powered energy. Team Shunya is designing and building a 'Net Positive Energy' house for Solar Decathlon. Solar Decathlon is an international competition organized by the U.S Department of Energy, in which teams from various countries compete to build a fully functional solar-powered house applying cutting edge technologies and innovations.

Core Responsibilities:

1. Understanding and working of the Dehumidifier
2. HVAC Calculation
3. Dehumidifier Design Using Solidworks
4. Temperature predictions

## Education



### M.Kumarasamy College of Engineering

Bachelor of Engineering - BE, Mechanical Engineering

2015 - 2019

Grade: 8.72/10

Keenly understands the concepts of Mechanical engineering and applied the core mechanical concepts to develop the products in Refrigeration and Airconditioning areas.

1. Portable Combined Refrigeration and Airconditioning system.
2. Atmospheric water collector using condensation techniques.

## Licenses & Certifications



**Machine Learning** - Coursera

6HR7TZBG9K6M



**Hypermesh** - CAE CENTRE



**Creo** - CADD Centre Training Services Pvt Ltd.

## Honors & Awards



**Best Innovative Performer** - Head of the Department, M.Kumarasamy college of engineering

Jan 2019

The Award was given by Dr.Ramesh, Head of the Department of Mechanical Engineering for developing an innovative idea & Miniature Prototype for solving current refrigeration & air-conditioning problems.

## Skills

Machine Learning • Deep Learning • Data Science • Python (Programming Language) • SolidWorks • Hypermesh  
• Data Analytics • Signal Processing