**Mowbray RV**

**Objective**

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| Seeking an opportunity where I can utilize my skills and knowledge to deliver value added results to the organization and further enhance my learning |

**Education**

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| DEGREE | INSTITUTE | YEAR | %/CGPA |
| MS , Mechanical science - Design | Indian Institute of Technology , Madras | 2023 | 8.8 |
| Manufacturing  Engineering | Central Institute of Plastics Engineering and Technology(**CIPET**),Chennai | 2020 | 8.85 |
| HSC(12th) | Vidya Mandir Senior Secondary School, Chennai | 2016 | 93.80 |
| SSC(10th) | Vidya Mandir Senior Secondary School, Chennai | 2014 | 82.00 |

**PROFESSIONAL EXPERIENCE**

1. **Project Associate - ICSR, IITM Ongoing**

**Design, Development, and Testing of Lower Limb Robotic Exoskeleton**

* Development of recursive lagrangian dynamic model code of lower limb for different speed of gait speed
* Implementation **of dynamic programming** and **model based reinforcement learning** to improve the walking gait for different terrains and obstacles.
* Comparison of different **OCP algorithms** for online trajectory optimization.

1. **Project Associate - ICSR, IITM/ Bhabha Atomic Research Centre (BARC) mar 21’ – Feb 22’**

**Development and Demonstration of Algorithms for Ingot Handling System**

* Deployment of trained model for Image detection of uranium ingot using **FRCNN/YOLO V5 algorithms**.
* Pose estimation and point cloud creation of ingot using **RANSAC algorithm**.
* Implementation of control algorithm for automatic pick and place of ingot.
* Design and simulation and testing of three axis gantry robot for 50kg payload.

1. **Project Intern -Isuzu Motors India Jan 20’ – Mar 20’**

Power train unit

* Analysis and study of various tools used in the engine assembly, torque parameters, the socket contour parameters.
* Based on the work and motion study of the unit a cycle time optimization was performed to reduce engine assemble time.
* Assisted in creating a Master tool database compromising of all the tools, it's specifications and its corresponding parts in the Isuzu 4JA1 diesel engine (BS VI model).

1. **Student Intern- ITC limited - SBU Packaging & Printing Oct 19’ – Dec 19’**

**Reel/Sheet/Flexible Feed Module (FMCG)**

* Tracked each machine unit performance data in the plant machine from catalogs to live inspections and a complete database was established.
* The database was further used to perform a **predictive maintenance** to optimize the production from bottleneck time.
* Assisted in establishing real time performance tracking of each machine.

1. **Inplant Training**

**Valeo Clutch Pvt Ltd. Oragadam, Chennai**

Clutch Manufacturing & Assembly

1. **Inplant Training Jun 18’ – Sept 18’**

**The Integral Coach Factory**, **Chennai**

**PROJECT**

1. **Development of dynamic model based reinforcement learning of human gait for walking of robotic exoskeleton in an unstructured environment**  **M.S Thesis Project April 21’- Ongoing**

* The LLE is developed in Opensim and a python script is interfaced for speed variation of gait.
* The developed model is trained in Open AI gym using RL techniques (**Policy gradient method**)
* Multiple shooting technique is implemented in the online estimation of trajectory.

2. **Formulation of MATLAB Code based on Conventional Finite Element Method**

* Solved and validated 2D Plane Stress and Plane Strain Problem.
* Finite element MATLAB code was written to analyse the plate with a hole and the obtained results were compared with the ANSYS simulation results

1. **Robot aided computer integrated manufacturing (CIM) system and cycle time reduction using heuristic approach**

* Involves designing a gantry robot for pick and place operation of the work piece before machining and after machining.
* The project involved reducing the cycle time of producing threaded box nuts using **particle swarm optimization algorithm**(PSO), yielding a 23% reduction in cycle time.

**4. Game development**

* Algorithms of games Sudoku, Minesweeper, 2048 & Trace where developed in C++.The GUI was also built and tested.

**Achievements**

* Department gold medalist of 2020 batch- undergraduate
* GATE 2020 Production & Industrial engineering AIR: 172

**Certification**

* Catia V5 on linkedIn Learning
* Robotics course on NPTEL(IIT KGP) and received an elite certificate
* Numerical Programming in Matlab course on NPTEL(IITM
* Web Application Development course on NPTEL(IITM) and received an elite certificate.
* Motors and Motor Control Circuits on COURSERA
* Machine learning course conducted by IBM
* AWS Machine learning course by Amazon and Udacity
* Reinforcement learning by udacity

**Software skill set**

C++, Python, ROS, Gazebo, Catia V5, Matlab, Mathematica, Ansys , MuJoCo