KARTHIK BACHU | ME17B053 |

https://www.linkedin.com/in/karthik-bachu

EDUCATION

B.Tech in Mechanical Engineering (Proof)
Indian Institute of Technology Madras
CGPA: 7.19/10 Year of Completion: 2021
Class XII – BIE, Telangana (Proof)
Narayana Junior College, Hyderabad
Percentage: 97.2% Year of Completion: 2017
Class X (ICSE) (Proof)
Sri Sai Public School, Hyderabad
Percentage: 93.5% Year of Completion: 2015

PROFESSIONAL EXPERIENCE

Ordnance Development Centre, Ordnance Factory Medak, Hyderabad *May-July'20*

Offer Letter: https://drive.google.com/file/d/1U1GNElVTpOsh_eR64wzxLLFV-39-ommI/view?usp=sharing
Internship Completion Certificate: https://drive.google.com/file/d/1TuP6irCEHieNb_0SkgaI6Mn2mBOqjUMP/view?usp=sharing
Project: Design and Analysis of mount and cradle assembly of a Remote Controlled Weapon Station(RCWS)

- RCWS as the name suggests, is a remotely operated weaponized system often equipped with a fire control system for light and medium caliber weapons installed on a ground combat vehicle.
- A mount and cradle assembly for RCWS was redesigned from scratch for holding and positioning of 7.62mm MAG gun.
- Analyzed the recoil forces generated for the given machine gun and have come up with a vibration isolation system for attenuation of vibrations generated.
- Modeled and formulated the vibration isolation system on SIMULINK library of MATLAB and have optimized the damping parameters such that the system comes to rest and equilibrium is achieved before the next round is fired .
- Ran a simulation to compute the Modal frequencies of the system and improvements in the design were made to prevent resonance.
- Analyzed the duty cycle of the 7.62mm MAG gun in order to actuate the cocking mechanism through a linear actuator.

Edufeat Pvt. Ltd. *May-July'19*

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Internship Completion Certificate: https://drive.google.com/file/d/1TwrOAFmAPVJlX110izpYHfeG4vkl0Hnr/view?usp=sharing

- Tutored students across the world in the subjects of Mechanical Engineering..

POSITIONS OF RESPONSIBILITY

Team Member, Mechanical Module Team Abhiyaan, CFI (proof) *Jan'19 - May'20*

- Team Abhiyaan represents IIT Madras in the Intelligent Ground Vehicle Competition (IGVC) where teams from the premier universities of the world participate conducted by Oakland University, USA.
- Our team stood 2nd in IGVC 2019 winning the Lescoe Trophy and also stood 6th in design.
- We build an autonomous bot and as a part of a Mechanical module, we design, simulate and fabricate the prototype.

Event Coordinator Robowars, Shaastra Nov'18-Jan'19

- As a part of the Design & Build team, I have conducted ROBOWARS where combat robots from various parts of the country contest.
- Successfully designed and organized the competition for the teams across the nation.

RELEVANT COURSEWORK *(*-Ongoing)*

Programming Languages: C, HTML, CSS
Software: Fusion 360, Solidworks, AutoCAD, Ansys, MATLAB
Coursera:

- Machine Learning (Proof)
- Neural Networks and Deep Learning*
- Convolutional Neural Networks*
- Improving Deep Neural Networks*

NPTEL: Practical Machine Learning with TensorFlow* (Proof), Programming, Data Structures and Algorithms using python* (Proof)
Courses:

Introduction to Programming - C	Differential Equations	Strength of Materials
Computational Heat and Fluid Flow	Linear Algebra for Engineers	Foundations of Fluid Mechanics
Finite Element Analysis*	Measurements, Instrumentation and Control	Kinematics and Dynamics of a Machinery
Strategies for Professional Growth	Unconventional Manufacturing Techniques	Applied Thermal Engineering
Fundamentals of Operations Research	Heat Transfer	Materials and Design
Pattern Recognition and Machine Learning*	Design of Machine Elements	Manufacturing Processes
Computational Tools: Data Structures Algorithms and Programming*	Manufacturing Technology	Energy Conversion System
Introduction to Game Theory*	Automation in Manufacturing	Advanced Operations Research*

PROJECTS

1. **3D Food Printer – 3D Printing Club, CFI (Proof)**

- The aim of the project was to build a 3d printer that prints food material in an aesthetically pleasing manner, such as deposition of ketchup on pizza bases, icing of cakes or printing chocolates of different shapes.
- Our current design incorporates a syringe pump extrusion mechanism where the rotary motion of the extruder motor causes a linear motion in the connecting rod which then either pushes/ pulls the syringe resulting in the extrusion of viscous liquids.
- Presented the project to students, entrepreneurs, industrial experts, professors and media at **CFI Open House.**

2. **Ball Balancing Mechanism, Course Project, Measurements Instrumentation and Control (ME2400)**

- Built a four-bar mechanism to accurately position a ball at desired location on a link using PID control system.
- Developed a MATLAB Simulink model to tune the parameters of the PID controller.

3. **Process planning for Hacksaw production, Course Project, Automation in Manufacturing (ME3302)**
4. **Laser Beam Machining, Unconventional Manufacturing Techniques(ME4323)**
5. **Gear Design, Manufacturing Technology(ME3301)**

- Designed and simulated a 2:1 speed reduction gearbox with a power output of 42KW; performed static structural, fatigue tests on the gears designed and modal analysis on the gear box.
- Performed process planning, factory layout, cost analysis and inspection for manufacturing the gearbox.

6. **Geneva Wheel Mechanism, Kinematics and Dynamics of Machinery(ME2201)**

MISCELLANEOUS

- Working as a part-time subject matter expert for Mathematics at Chegg. Inc.. (Proof)
- As a Saathi Mentor, I was allotted 4 fresher students to guide them in their freshman year academically and mentally.
- Was a volunteer in IIT for Villages during Shaastra 2019 where we helped rural people to set up food stalls and also in sales.
- Worked as a volunteer for Extra Mural Lectures Team, IIT Madras in the academic year 2018-19