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Education

National Institute of Technology Rourkela

Bachelor of Technology (B. Tech.), Mechanical Engineering

- Honours, **8.46** CGPA

Rourkela, India
July 2015 - May 2019

Liverpool International College

Higher Secondary Education Board

- **77.70 %** marks

Kathmandu, Nepal
June, 2015

Monastic Higher Secondary Boarding English School

Matriculation, School Leaving Certificate Examination

- **84.00 %** marks

Janakpur, Nepal
April, 2013

Work Experience

Bajaj Auto Limited

Graduate Trainee Engineer, Engineering Department

- Manufacturing process optimization and improvements of various components using CAD, CAM and CMM software's.
- Lead time reduction of fixture development using modular design concept.
- Fuel Tank injection pump replaced for cost saving and modified the design of tank outer body in UG NX for welding new pump.
- Robot reach testing of frame fixture in Robot Studio making line layout compatible and efficient.
- Study and compilation of DFM check sheets, Part process standard, IPO sheets of Press & Weld components.
- 3D scanning of manufactured frame and dimension control by making CTQ report.
- Motorcycle frame child part checking fixture improvement providing provision to check all dimensions and made easier for inspection.
- Motorcycle frame weld bead quality enhanced by making weld gap 0.8mm standard.
- Vehicle routing standardisation of harness, cables & pipes in motorcycle vehicle assembly.
- Removed side panel gap issue in assembly, finding the root cause and modified the design of plastic body part to overcome issue.

Pune, India
July 2019 – Oct 2020

Rourkela Steel Plant (SAIL)

Internship, 2 months

- Study about the process of making Hot rolled coils, Spherical weld pipes, and Plates from raw materials to finished product.
- Understanding the practical process of preparing liquid iron from ores, coal, flux and other foreign elements.
- Learning about application of other operations like cooling, heat treatment, plate tolerance range.

Rourkela, India
May 2018 – July 2018

Black Mamba Racing Club

Project Mentor

I guided the team in design and manufacturing to develop an ATV for the competition in BAJA SAE and closely worked with a group to enhance the performance of the vehicle without any failure.

NIT Rourkela, India
Mar 2016 – Feb 2019

Projects and Workshops

Final Year Undergraduate Project

July 2018 – May 2019

Design and Simulation of Brake Rotor for an All-terrain Vehicle

- 3D modelling of brake rotor using SolidWorks as per required dimensions followed by optimisation after several iteration for structural analysis and heat dissipation.
- Manufactured using laser cutting, heat treatment and surface finishing to get desired coefficient of friction.
- Testing of different parameters by assembling in the vehicle and validating theoretical result.

BAJA SAE ATV

Mar 2016 – Feb 2019

Designed, fabricated and tested 4-wheeled off-road buggy

- Researched on optimising gearbox to achieve desired Gear Ratio.
- 3D design of gearbox using SolidWorks and design optimisation with numerous iteration performed after structural analysis in Ansys.
- Worked to design and manufacture the chassis structure and researched for material selections.
- Customisation of Brake Rotor as per required dimension which was designed in SolidWorks followed by Structural Analysis and heat dissipation in Ansys.
- Design of brake pedal with balance bar mechanism that provides feature to apply different amount of force to different wheels.
- Gantt chart, SWOT analysis, Cost report, DFMEA and PFMEA reports were prepared for optimization and case study to increase performance and value.

Automatic Headlamp Controller

Aug 2017 – Dec 2017

Design a component to automatically control Headlamp

- Study of different sensors relevant for this application, concluding Phototransistor sensor to use.
- Designed a circuit then made a proto components for detecting light of approaching vehicle and controls High-Low beam of headlamp as per programmed range.
- Successfully mounted on car and connected with headlamp circuit that functions like automatic switch to alter High-Low beam.

Research Interest

Research and Development of Innovative Mechanical Components

- Design methodology and optimization
- New mechanism design and development
- Intelligent control and automation

Volumetric Flow Meter for Fuel

Develop a Volumetric flow measuring Instrument error less than 0.1%

- Use the concept of throttle plate as in carburetor to measure volumetric flow
- Measure the force of flow striking the plate then converting into velocity of flow
- Tracking the flow cross sectional area through the cylinder through plate angle
- Calibration and develop calculation module that provides output volumetric flow

Leadership and Extra Circular Activities

BAJA SAE - Black Mamba Racing

President of Team Black Mamba Racing

Mar 2018 – Feb 2019

BMR is NITR's official club participating in BAJA SAE India, design & manufacture an All-Terrain Vehicle. Managed a team of 35 members and monitored designing process, manufacturing, assembly and logistics up to the main event. Lead the team to build a lightweight and robust vehicle at low cost by performing design simplification.

Powertrain Subsystem Head

Mar 2018 - Feb 2019

Powertrain group was a team of 8 members, subsystem of Black Mamba Racing Club, where I designed a customised gear box for our buggy to achieve the required gear ratio. Further, our role was to design, analyse, manufacture and assemble all transmission components.

Brake Subsystem Head

Mar 2017 – Feb 2018

Brake subsystem was a team of 5 members, where our responsibility was to setup braking components into the buggy. To design a braking system for an ATV is challenging as it require different force at different wheels, so we had to design a component to apply varying force. I had designed a balance bar mechanism attached with brake pedal to counter this issue.

Customized a Disc Brake Rotor

June 2017 – Dec 2017

Designed a brake rotor as per the required dimensions of our buggy in SolidWorks and simulated with Ansys for FOS and heat dissipation. Manufacturing a custom brake rotor resulted in weight reduction with better performance.

**SAE - Society of Automotive Engineers
Member, SAE club**

2015 – 2019

SAE club is NITR's official club, conducts various seminar related to Automotive topics, automobiles quiz to make students enlighten, and projects for improving knowledge of automotive components. I had involved in these activities for enlarging my knowledge in automobiles field.

Advanced Automotive Workshop

Oct 2016

Mega Workshop Conducted by BAJA SAEINDIA

Attended workshop held in SRM University, Chennai. There I got chance to learn about different systems and manufacturing process in building a vehicle. Improved my knowledge of various components and their design consideration in manufacturing vehicle systems like transmission, suspension, braking, and vehicle dynamics.

Proficiency and Interests

Technical skills	Excel, PowerPoint - Basic SolidWorks, NX Unigraphics, AutoCAD - Design Software Ansys, 3D Scanning, GOM, Robot Studio - Analysis Software MATLAB - Programming
Languages	English - Professional Fluency Hindi - Basic Fluency Nepali - Basic Fluency Maithili - Mother Tongue
Interests	Travelling, Listening Music, Driving

Honours and Awards

- Graduated Bachelor of Technology in Mechanical Engineering with Honours, 2019
- Secured 9th position among 120 teams in BAJA SAE ATV endurance event where I was driving the vehicle for 4 hours continuously with 21 laps, Jan 2019
- Achieved 1st rank in all India BAJA SAE virtual written round among 486 teams and 4th position overall in design presentation of an All-Terrain Vehicle, June 2016.

References

- S. Murugan: Professor, Department of Mechanical Engineering,
National Institute of Technology Rourkela
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- Subrata K Panda: Associate Professor, Department of Mechanical
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