Anaya Mahajan

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EDUCATION

Dr. D.Y. Patil Institute of Engineering, Management and Research, Akurdi Aug 2023 – 2027
B.E. Chemical Engineering – 9.25/10

WORK EXPERIENCE

Electrical Powertrain Member – SAE eBAJA 2024 | *Team Genesis 16 Motorsports* July 2024 – Present

- Designed and integrated a 48V lithium-ion battery pack (72% lighter than stock), including BMS selection and safety validation via MATLAB/Simulink
- Conducted MATLAB-based range simulations predicting 45km under standard load conditions
- Fabricated 6 FRP body panels via hand layup method

Powertrain Member – SAE mBAJA 2023 | *Team Genesis 16 Motorsports* July 2023 – June 2024

- Analyzed catalytic converter designs that could lower CO and HC emissions by an estimated 30% for off-road vehicles
- Assessed EGR system integration for emission control and thermal efficiency optimization

PROJECTS

Nanofluid-Based Cooling of Lithium-Ion Battery Modules in Electrical Vehicles

- Evaluated boron nitride nanofluids as high-performance alternatives in EV battery thermal management, addressing limitations of conventional cooling methods

Production of Biodiesel from Waste Vegetable Oil

- Synthesized 500mL biodiesel via transesterification of vegetable oil using methanol and a base catalyst achieving 92% yield
- Analysed viscosity, and phase separation to confirm compliance with ASTM biodiesel standards

Additional Projects

- Developed a solar-powered mine dewatering pump using ESP32 automation under an OPEX model
- Designed a tool for calculation of Heavy Metal Pollution indices in groundwater with data visualization features

ACHIEVEMENTS

Finalist, *AzeoRover IIT Bombay (AZeotropy, 2025):* Designed a hydrogen fuel cell system with integrated storage and power regulation for a national-level rover competition

Finalist, *Chempreneur IIT Bombay (AZeotropy, 2025):* Proposed thermochromic packaging concept, demonstrating 90% theoretical reliability based on material feasibility analysis

Skills

Analysis: MS Excel, MATLAB, Simulink, TinkerCAD, Ansys Granta Selector
Circuit Design and CAD: AutoCAD, SolidWorks, EasyEDA, RapidHarness
Engineering Validation & Testing: DFMEA, PFMEA, DVP&R