GAJENDRA

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Education

Indian Institute of Technology Patna — Patna, India
B.Tech in Mechanical Engineering ***(CPI: 8.72)*** — *Jul 2023 – May 2027*

Shiv Kumar Agarwal Janta Inter College — Bulandshahr, India
Senior Secondary (Class XII, UP Board) – ***83.4%*** — *2022*

Shiv Kumar Agarwal Janta Inter College — Bulandshahr, India
High School (Class X, UP Board) – ***89.33%*** — *2020*

Experience

Research Intern – PCM-Based Thermal Management of Prismatic Li-ion Battery **Report Link**
Sustainable Energy Research Laboratory, IIT Patna — *Jun – Jul 2025*

- Developed 3D electro-thermal model of **prismatic Li-ion battery (1P1S, 1P6S)** using **NTGK framework** in ANSYS Fluent.
- Simulated **PCM (n-octadecane) based passive cooling** using solidification/melting model.
- Analyzed performance under 1C–5C discharge and varied ambient temperatures (293K–323K).
- Reduced peak temperature from **327.6K to 303.9K** at 5C and validated model with <1.5% deviation from literature.

Technical Skills

Core Mechanical: Heat Transfer, Thermodynamics, Fluid Mechanics, Energy Systems
Simulation & Analysis: ANSYS Fluent, CFD, Electro-Thermal Modeling, FEA
Battery Systems: NTGK Model, ECM Parameter Identification, SOC Analysis
Tools: MATLAB, Python, SolidWorks, AutoCAD

Projects

Electro-Thermal Modeling & Thermal Management of Li-ion Battery (18650)
NTGK & ECM Based Analysis — *2025*

- Generated heat generation profiles using NTGK model from experimental current–voltage data.
- Extracted ECM parameters as functions of SOC and temperature.
- Performed conjugate heat transfer simulations using liquid cooling in ANSYS Fluent.
- Evaluated peak temperature and thermal uniformity.

SolidWorks Assemblies Design — **Project Link**
Created and modeled assemblies in SolidWorks to demonstrate CAD proficiency. — *2025*

- Designed mechanical assemblies with multiple part integrations.
- Applied constraints, mates, and motion studies to validate assembly functionality.
- Exported models to neutral formats (STEP, IGES).

Steady-State Heat Conduction in a Square Plate — **Project Link**
Finite Difference Method | Python — *2025*

- Solved 2D heat conduction problem and visualized temperature contours.
- Validated numerical results against analytical solutions.

Extra-Curricular Activities

Sub-Coordinator, Training & Placement Cell, IIT Patna

- Coordinated with company HR representatives through calls and emails for recruitment processes.
- Assisted in organizing placement drives and managing student–recruiter communication.

Industry Exposure Trainee, BPCL, Goa (Jan 2026)

- Selected as one of 9 students for the industry exposure program.
- Served as student coordinator during the visit.
- Observed large-scale oil & gas mechanical systems, refinery operations, and industrial safety practices.

Student Mentor, Student Mentorship Program (SMP), IIT Patna

- Mentored junior students in academics and course planning.
- Guided juniors in resolving academic and campus-related challenges.

Core Team Member, Robotics & Aviation Club, IIT Patna

- Contributed to drone assembly including integration of motors, ESCs, frames, and control systems,participated in testing

Team Member, Robocon Club, IIT Patna

- Assembled mechanical components of competition robots.
- Worked on motion planning, movement mechanisms, and balancing strategies of bots.