Donkena Manideep

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B.Tech-M.Tech Dual Degree | Department of Electrical Engineering **Email :** manideep21@iitk.ac.in **Phone :** +91-8639620862

Academic Qualifications

Year	Degree/Certificate	Institute	CPI/%
2025 - Present	MTech	Indian Institute of Technology, Kanpur	9.5/10
2021 - 2025	BTech	Indian Institute of Technology, Kanpur	8.7/10
2021	APBIE(XII)	Sri Chaitanya Educational Institution, Vijayawada,AP	95.6%
2019	SSC(X)	Sri Chaitanya School, Guntur,AP	10/10

Scholastic Achievements

- Secured **All India Rank 2798** in **JEE Advanced 2021** among the 1.51 Lakh shortlisted candidates.
- Secured **All India Rank 2491** in **JEE-Mains 2021** among 1.3 million candidates
- Received a **LPU study grant** of **1 Lakh** from LPU University for securing **All India Rank of 298**.
- Secured A^* **grade in 3 courses**, awarded to top 1-2% students in a course.

PROFESSIONAL EXPERIENCE

JAGUAR LAND ROVER TBSI — HVLV, EP

May 2025 – July 2025

OBJECTIVE	• Developed an **integrated AC-battery system architecture** enabling **simultaneous AC traction drive and low-voltage DC generation** for next-gen electric vehicles.
ANALYSIS	• **Modeled and simulated** advanced multilevel converter topologies (MMC, CHB) in PSIM, producing a clean and stable **400V AC output**. • **Engineered** a novel modulation strategy enabling controlled dual-output (**400V AC + 12V DC**) from a single MMC, eliminating redundancy. • **Designed and benchmarked** high-efficiency isolated DC-DC converters (LLC, DAB), achieving **>96% power conversion efficiency**.
FINDINGS	• **Developed** a tool to validate **ZVS operating ranges** for wide input/output conditions in DAB converters. • **Proposed** a novel AC-battery architecture enabling simultaneous AC+DC outputs, achieving **30% fewer components** than conventional EV powertrain.

Key Projects

- **Few-Shot Learning, Brain and Cognitive Society, IIT Kanpur** (*Nov'22 – Dec'22*)
  - Scraped images of Y21 students and applied **data augmentation** using Keras.
  - Implemented a basic **few-shot similarity detection model** on the dataset and reviewed state-of-the-art architectures.
  - Collaborated in a team of 5 to improve the model's performance with advanced techniques.
- **First Steps to Flutter, Coding Club, IIT Guwahati** (*Dec'22 – Jan'23*)
  - Developed an **Event Scheduler App** using state management, stateful widgets, and navigation.
  - Integrated **Google authentication** with Firebase and created a Movies App using the themoviesdb Web API.
  - Built a **chatting app** with Firestore (NoSQL), including CRUD operations.
- **Traction Load Forecasting (Undergraduate Project, IIT Kanpur)** (*Aug'23 – Dec'23*)
  - Applied Pandas, scikit-learn, and Seaborn for preprocessing and visualization of temporal load data.
  - Achieved 87.4% accuracy with classical models (**AR, ARIMA, SARIMA, SARIMAX**).
  - Designed deep learning models based on **LSTM and RNN**, improving accuracy to 93.6%.
- **Basis of Learning, Brain and Cognitive Society, IIT Kanpur** (*Jun'22 – Aug'22*)
  - Built **ANN and CNN models** for MNIST classification.
  - Applied regression and ML algorithms to predict Housing Prices.
  - Studied RNN, LSTM, and GANs (conceptual familiarity).
- **Mathematics for Data Science, Stamatics, IIT Kanpur** (*May'22 – Jun'22*)
  - Performed data wrangling and **EDA** using Pandas, NumPy, Seaborn, and Matplotlib.
  - Applied **linear and logistic regression** to predictive tasks.

- Implemented a basic **decision tree** classifier in Python.

- **Analysis and Controller Design for Bicycle Model**(Course Project – EE650, IIT Kanpur) (*Jun'24 – Jul'24*)
  - Linearized the nonlinear Bicycle Model and derived its **state-space representation**.
  - Designed a state feedback controller ensuring settling time of 2s and overshoot $< 5\%$.
  - Validated performance via **MATLAB/Simulink** simulations.

- **MPPT Tracking for Boost Converter** (Mentor - Dr. Gururaj MV | Course Project - EE798A) *Feb'25*
  - Developed a **Boost Converter** model in **MATLAB**, utilizing specified L and C values to meet design requirements.
  - Implemented **Maximum Power Point Tracking** and Analyzed the effect of load resistance on converter performance.

- **Controller Design for Power Converters** (Course Project – EE662, IIT Kanpur) (*Mar'24 – Apr'24*)
  - Designed **Full-Bridge Isolated Buck and Boost Converters**, limiting V_{out} ripple to 2%.
  - Modeled converters using **Averaged Switch Modeling**.
  - Implemented **voltage-based and two-loop control**, achieving < 5 ms settling time.

- **2D Convection-Diffusion Solver and Flux Analyser** (Course Project - SEE609) *Oct'23 – Nov'23*
  - **Developed** a modular **Python** solver for 2D convection-diffusion problems with **UDS/CDS discretization** on boundary conditions.
  - **Analyzed** flux behavior under mesh refinement and extrapolation, and **generated** heatmaps for varying source terms using **Python**.

- **Wireless Power Transfer (WPT) Charger Design for EV Battery** (Course Project - SEE633) *Jan'25 – Apr'25*
  - **Engineered** a 10 kW, 85 kHz Series-Series compensated WPT system for a 400 V EV charger, **deriving** resonant components from first principles and **analyzing** device stresses to ensure reliability.
  - **Developed and simulated** analytical and dynamic models (**PSIM**, **MATLAB/Simulink**) to **characterize** efficiency ($\eta_{max} \approx 99.16\%$) and power transfer under varying loads, demonstrating key design trade-offs.
  - **Designed, implemented, and validated** a PI controller to regulate output voltage, **achieving** robust stability (Phase Margin $\approx 65°$) and fast transient response (settling time ≈ 10 ms).

M.tech. Thesis

AI-Assisted Modelling and Parameter Estimation of Litz-Wire and Ferrite-Core WPT Coils under Misalignment
IEEE ECCE-Asia. *April'25 – Present*

Supervisor: Dr. Suvendu Samanta, Department of EE, IITK

- **Developed** a **Transfer Learning-based ML Framework** for accurate parameter modelling of WPT coils.
- **Achieved 2% higher efficiency** compared to analytical-based modelling approaches.
- **Maintained** parameter estimation error below 4% with respect to experimental values for lab-built rectangular WPT coils.
- **Future Work: Extending** to **ML-assisted modeling of DD Coils** under misalignment scenarios.

Technical Skills

- **Programming Languages:** C, C++, Python, Dart, JavaScript, HTML, Bash, Verilog HDL, LaTeX
- **Libraries:** TensorFlow, NumPy, Pandas, scikit-learn, Matplotlib, Seaborn, BeautifulSoup
- **Software:** MATLAB, Simulink, PSim, LTspice, PSpice, MicroCap, Ansys, Arduino IDE, Git, Autodesk Inventor,Primere Pro, Kdenlive, Canva

Positions of Responsibility

- **Secretary, Brain and Cognitive Society** (*Aug'22 – Mar'23*)
  - **Organized** lectures, workshops, and projects to engage and mentor new students.
  - **Exhibited** society's research and projects at the **Science & Technology Pavilion**.
  - **Created** a blog series on advanced **Deep Learning topics**.
- **Senior Executive, Techkriti'23** (*Dec'22 – Apr'23*)
  - **Coordinated** a team of junior executives in contacting potential speakers, sponsors, and exhibitors.
  - **Reached out** to influential figures in the technology industry for keynote speeches and discussions.
  - **Built** a comprehensive contact list of speakers and partners using research and networking skills.
- **Teaching Assistant - EMEC Laboratory** *(Aug'25 - Nov'25)*
  - Responsible for Managing and Helping students conduct experiments at Electro-Mechanical conversion Labs

Relevant Courses

Computing & Artificial Intelligence

Fundamentals of Computing	Modern Cryptology
Advanced Topics in Machine Learning (A)	Machine Learning Specialization, Coursera
Introduction to Reinforcement Learning	Analysis & Design of Networked Dynamical Systems

Core Electrical & Electronics

Introduction to Electrical Engineering	Power Systems
Introduction to Electronics	Digital Electronics
Signal, Systems and Networks (A)	Analog Electronics
Electromagnetic Theory	Thermodynamics (A)

Power Electronics & Electric Vehicles

Control Techniques in Power Electronics	Power Electronics
Electric Vehicles	Power Converters for EV Charging
Design, Operation and Control of Microgrids	Power Electronics for Electric Vehicles (A*)

Control Systems

Control Systems Analysis	Basics of Modern Control Systems

Signal Processing & Mathematics

Digital Signal Processing (A*)	Principles of Communication
Mathematical & Computational Tools for Engineering (A*)	Statistical Signal Processing–I
Partial Differential Equations	Probability and Statistics

Extra-Curricular Activities

- **Coordinated** major cultural events at IITK, including **Janmashtami'2023** (3,000 attendees) and a **3-Day Bhagavad Gita Lecture Series** on value-based education.
- **Led** regular Saturday **meditation sessions** and **organized retreats** across India to promote holistic well-being.
- **Managed** technical operations of **Gitanushilanam'2023**, a nationwide Gita competition with **15k+ student participants**.
- **Developed** websites for student organizations and events (**Janmashtami'22, EEA, Janmashtami'25**) using Bootstrap, HTML, and JS; **designed** creative posters and videos for cultural outreach.