Jyotirmoy Singh

– New Delhi, India

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Pre-Final year double major at Birla Institute of Technology and Science, Pilani (Hyderabad Campus) pursuing Bachelor of Engineering (Hons.) in Computer Science Engineering and Master of Science (Hons.) in Economics, applying for dissertation in Computer Science

Education

Bachelor of Engineering with Honors, Master of Science with Honors   8.53/10.0
    Computer Science and Engineering & Economics, BITS Pilani (10 Semesters)   *Sept 2021- July 2026*

Internships and Research Projects

- **Software Engineering Intern - Google, India**
  Upcoming - Summer 2025
- **Rainfall Prediction for North East India, Government of India**
  Guide: Scientist Ritu Anilkumar (May 2023 – July 2023, Working Presently for Publication) - Research Intern (NESAC)
  · Designed and implemented neural network models for classification and rainfall prediction in North Eastern Parts of India.
  · Achieved significant accuracy improvements using Interpretable ML Models for Rainfall Classification and predictions such as Explainable Boosting Machines.
  · Developed and integrated Vanilla Neural Network models, enhancing rainfall prediction accuracy by 10-15
- **Applications of Generative AI in Software Engineering, BITS Pilani x Impactsure Technologies, Hyderabad**
  Guide: Prof. N. L. Bhanumurthy, Prof. Aruna Malapti (2024 - Present)
  · Collaboration between BITS Pilani and Impactsure Technologies for a MoU of **150,000+USD** - leading the project for LLM Building, with a team of 4.
  · Comparing Small Language Models (SLMs) and transformers for industrial applications, optimizing for speed and cost, working on striking ideal balance by building layers of abstraction via a custom SLM.
  · Exploring different architectures such as Rail-Only to reduce training costs for LLMs and looking into new methods to make creation easily accessible.
  · Building transformers from scratch and integrating them with existing LLMs for constrained use cases, using PyTorch and TensorFlow.

Key Academic Projects

- **Building Second Hand Marketplace for University Students**
  Guide: Prof. Aritra Mukherjee, Computer Science Dept, BITS Pilani - Hyderabad
  – Developed an anonymous bidding and chatting platform with custom currency for privacy and secure transactions.
  – Utilized scalable tech stack to handle multiple users simultaneously, ensuring high performance.
- **Plant Based Nutraceutical for Cancer Research**
  Guide: Prof. Jabez J. Christopher, Computer Science Dept, BITS Pilani - Hyderabad
  – Built a database system connecting nutraceutical vendors to cancer patients, considering allergies and cancer types.
  – Ensured real-world applicability by structuring data to handle various medical and nutritional complexities such as allergies and related.
- **Machine Learning Approaches to Predict Under-5 Mortality Rate in Ethiopia**
  Guide: Prof. Bheemeshwar Reddy A, Economics Dept, BITS Pilani - Hyderabad
  – Replicated ML models like Logistic Regression and Random Forest to improve child mortality predictions using data cleaning in R.
  – Focused on spatial distribution and policy insights, utilizing both R and Python to strengthen predictive accuracy.

- **Age at Marriage and Women's Labor Market Outcomes in India**
  Guide: Prof. Bheemeshwar Reddy A, Economics Dept, BITS Pilani - Hyderabad
  - Analyzed data from IDHS 2012, addressing multicollinearity and heteroskedasticity with advanced econometrics techniques.
  - Improved regression models with stepwise procedures using Stata and R for data visualization and cleaning.

- **Impact of APMC Act Repealing on Farmer's Income**
  Guide: Prof. Rishi Kumar, Economics Dept, BITS Pilani - Hyderabad
  - Analyzed the impact of the APMC Act repealing on farmers' income using regression models with data from the IHDS dataset, conducting tests like Breusch-Pagan and Shapiro-Wilk to ensure model validity.
  - Reviewed relevant economic literature to support the findings and developed a graphical correlation matrix to examine relationships between variables.

- **Impact of Sikkim Organic Mission on the Agricultural Yield of the State**
  Guide: Prof. Rishi Kumar, Economics Dept, BITS Pilani - Hyderabad
  - Analyzed the impact of the Sikkim Organic Mission on agricultural yield using Fixed and Random Effects regression models, testing for time-fixed effects and heteroskedasticity.
  - Focused on evaluating the statistical significance of the initiative and controlling for external factors to ensure precise model estimations.

- **Optimization for Vehicle Routing Problem using Genetic Algorithms**
  Self
  - Developed a genetic algorithm-based solution for optimizing logistics in VRP using Python and DEAP.
  - Designed a fitness evaluation function, showing improvements in routing efficiency and cost-effectiveness.

Notable Achievements and Scholastic Work

- Developing curriculum for entrepreneurship and minor program for BITS Pilani across campuses (Ongoing)
- Qualified for the Regional Math Olympiad (RMO)
- **National Level Math Gold Medalist**
- Awarded **A grade** in Computer Programming course **given to 5 students out of 400+** for exceptional performance, scored highest in the institute
- Launched first Startup in eSports Industry as a team at the age of 12
- Founded first competitive gaming league in Clash of Clans, **at age 14**, with a prize pool for 5+figures
- Scaled multiple businesses and personal brands by having a Content MarketingBusiness
- Youngest member **at age 14** to join Nova eSports as a Content Creator as a part of their Nova Creative Club
- Sponsored by ClanPlay - Israel based organisation for creating content on YouTube and bring sponsors to startup and leagues

Technical Strengths

- **Programming Languages:** C/C++, Python, Prolog, Java, Go, Linux.
- **Development:** HTML, CSS, Django, Bootstrap, SQL, JavaScript, PyTorch and related.
- **Others:** LaTeX, Matlab, MIPS-Assembly, R, Verilog.

Positions of Responsibility

- **Teaching Assistant** for Institute Incubation Cell.
- **Google Developer Student Club - Deep Learning Team Lead** (*GDSC 2023-24, BITS Hyderabad*): Involved in conducting workshops, building meaningful projects with the team and promoting culture on campus.

Courses Undertaken

Foundations of Data Science, Machine Learning, Computational Economics, Theory of Computation, Logic in Computer Science, Object Oriented Programming, Econometrics, Applied Econometrics, Data Structures & Algorithms, Fundamentals of Finance and Accounting, DBMS, Probability and Statistics, and General Biology.

Expected Additional Courses to be Completed by End of Year
Natural Language Processing, Game Theory, Optimization, Generative AI, and Cloud Computing.