Prince Kumar

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ACADEMIC DETAILS

Degree	Specialization	Institute	Year	CPI/%
M.Tech.	*Computer Science and Engineering*	IIT Gandhinagar	2023-Present	8.13
B.Tech.	*Mechanical Engineering*	Techno Main Saltlake, Kolkata	2017-2021	8.39
Class XII	*Physics, Chemistry, Maths*	Cambrian Public School, Ranchi	2016-2017	74.6
Class X		V.B Balika Vidyapith, Lakhisarai	2013-2014	9.0

WORK EXPERIENCE

- **Teaching Assistant, Databases.** [January '25 - Ongoing]
  (Focus Areas: RDBMS, SQL, Hashing, Transactions ,Concurrency Control and related topics)
  - Organizing and evaluating quizzes and assignments.
- **Teaching Assistant, Machine Learning.** [August '24 - November '24]
  (Focus Areas: Decision Trees, Random Forests, Linear Regression, Neural Networks, and related topics)
  - Conducted tutorial sessions, guiding students through implementing machine learning algorithms using Python and libraries such as PyTorch, and Scikit-learn.
  - Organized and evaluated quizzes and assignments on real-world datasets, and conducted Viva of students.
- **Teaching Assistant, Data-Centric and Computing.** [January '24 - April '24]
  (Focus Areas: Data Structures, Algorithms, Databases, and Statistics)
  - Conducted hands-on lab sessions and guided students through problem-solving exercises to improve core concepts.
  - Provided tutoring and support for students, helping them debug code and optimize algorithms.
- **Assistant System Engineer, Tata Consultancy Services Ltd.** [October '21 - June '23]
  - Identified, analyzed, and resolved production incidents, minimizing downtime and ensuring quick service.
  - Collaborated with cross-functional teams including development, testing, and infrastructure teams to troubleshoot and resolve complex technical issues.
  - Ensured adherence to Service Level Agreements (SLAs), successfully meeting response and resolution timeframes.

PROJECTS

- **Energy Disaggregation (NILM) using Self-Attention/Transformer** [December '23 - December '24]
  (Prof. Nipun Batra, IIT Gandhinagar) | Project Link
  - Built a transformer-based model to predict individual appliance power consumption from aggregated energy data.
  - Leveraged self-attention mechanisms to accurately model temporal dependencies in power consumption patterns.
  - The model provided more accurate disaggregation of power usage than traditional Seq2Seq and RNN methods.
- **Transformer from scratch for Machine Translation** [August '24 - September '24]
  (Prof. Nipun Batra, IIT Gandhinagar) | Project Link
  - Developed a Transformer from scratch to cater machine translation tasks, implementing the entire architecture.
  - Gained an in-depth understanding of the Transformer architecture by building key components such as the encoder-decoder structure, self-attention mechanisms, and feed-forward networks.
- **Vision Transformer from scratch for Image Classification** [September '24 - October '24]
  (Prof. Nipun Batra, IIT Gandhinagar) | Project Link
  - Developed a vision Transformer from scratch to cater Image classification tasks, implemented the entire architecture.
  - Gained a deep understanding of Vision Transformer (ViT) by building key components such as patch embeddings, self-attention mechanisms, and transformer encoders.
- **E-commerce Product Query AI Assistant** [November '24 - Ongoing]
  (Independent Project) | Project Link
  - Designing an AI assistant to analyze product reviews and ratings on e-commerce platforms, enabling users to query product-related questions.
  - Building an NLP-based system to extract relevant insights from hundreds of reviews, summarizing key information like sentiment, product features, and user opinions.

TECHNICAL SKILLS

- **Programming & Libraries:** Python, C/C++, SQL, NumPy, Pandas, PyTorch, Scikit-learn.
- **Tools:** VS Code, Git/Github, Linux, MySQL, Oracle, GCP, Docker.
- **Area of Interest:** Machine Learning, Deep Learning, Computer Vision, Operating System.

ACHIEVEMENTS

- Secured AIR 608 (99.2 Percentile) in GATE 2023 Computer Science and Engineering.
- Solved 900+ DSA questions on LeetCode , among the top 8.99% users with highest contest rating: 1767.
- Contributed to NILMTK, an open-source library for non-intrusive load monitoring.