

Vikram Kumar

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EDUCATION

Year	Degree/Certificate	Institute	CPI/%
2023-Present	MTech /Cognitive Systems	Indian Institute of Technology, Kanpur	7.5/10
2018-2022	B.Tech/Computer Science & Engg.	Katihar Engineering College	7.51/10
2017	XII (BSEB)	D. S. College,Katihar	71.8%
2015	X (BSEB)	H. N. High School	76.8%

THESIS WORK

- Automatic Question Generation Using LLM** (MTech Thesis) (July'24 - Present) Supervisor: Prof. Nisheeth Srivastava
 - Developed LLM-driven multiple-choice question (MCQ) generation using local LLMs with Ollama and remote APIs from OpenAI and Anthropic, effectively producing passage-based and logical questions.
 - Currently researching the creation of geometry-related questions.
 - Automated parametric question modification using Python scripts with NumPy, SymPy, and nltk.corpus.
 - Exploring LLM-based automation for script generation.

ACADEMIC PROJECTS

- Analyzing MovieLens Data with Visual Analytics** Feb'24 - Aug'24
CS661-Guide: Prof. Soumya Dutta Indian Institute of Technology, Kanpur
 - Full-Stack Visualizations:** Developed using Dash, Plotly, and Pandas for interactive front-end visualizations and back-end data handling. The visualizations featured a movie recommendation system, genre analysis, and dynamic visualizations of user preferences and trends, employing the MovieLens dataset to deliver in-depth insights.
- Prototype-Based Classification and Linear Regression** Aug'23 - Nov'23
CS771-Guide: Prof. Piyush Rai Indian Institute of Technology, Kanpur
 - Classification Models:** Built and tested prototype-based classification models, improving classification accuracy by utilizing effective feature extraction techniques.
 - Linear Regression Implementation:** Implemented linear regression algorithms to explore regression boundaries, leading to better predictive insights.
- K-Means Clustering Applied to Non-Linearly Separable Data for Enhanced Pattern Discovery** Aug'23 - Nov'23
CS771-Guide: Prof. Piyush Rai Indian Institute of Technology, Kanpur
 - K-Means Clustering:** Developed and tested K-means clustering on a dataset with non-linear separability, utilizing hand-crafted feature transformations and kernel-based methods with RBF kernels. Assessed clustering accuracy with different landmark selections and visualized the outcomes to evaluate clustering performance and feature effectiveness.
- Topic Modeling of Chrome Browsing History** Feb'24 - Apr'24
CGS616-Guide: Prof. Nisheeth Srivastava Indian Institute of Technology, Kanpur
 - Topic Modeling:** Developed a Python tool to analyze Chrome browsing history by identifying main topics from user activity using LDA topic modeling. Visualized the findings to uncover key patterns and trends.
- Movie Recommendation System** Feb'24 - Apr'24
CGS616-Guide: Prof. Nisheeth Srivastava Indian Institute of Technology, Kanpur
 - Hybrid Recommender System:** Implemented a hybrid movie recommender in Python, integrating content-based and collaborative filtering methods. Users provide their previously watched movies, genres, and IDs, and the system recommends new titles based on content similarities and user preferences.
- Drift-Diffusion Model Analysis for Reaction Time Experiments** Feb'24 - Apr'24
CGS786-Guide: Prof. Pragathi Balasubramani Indian Institute of Technology, Kanpur
 - Drift-Diffusion Model:** Developed a drift diffusion model (DDM) to simulate attention mechanisms and analyze reaction times in a stimulus-response congruency experiment, highlighting how congruency influences cognitive processing and decision-making efficiency.

TECHNICAL SKILLS

- Programming Languages:** Python, C, C++, R, SQL
- ML Libraries/Utilities:** PyTorch, Scikit-Learn, Pandas, NumPy, Jupyter, Dash, Plotly, Matplotlib, PostgreSQL, VTK, Jupyter Widgets, OpenAI, Anthropic, Ollama, ChatOllama, LangChain, ParaView, PsychoPy

SCHOLASTIC ACHIEVEMENTS

- GATE CS 2023:** Secured All India Rank 983 out of 75,680 candidates.

RELEVANT COURSES

- MTech Courses:** Machine Learning (CS771), Foundations of Cognitive Science (CGS601A), Basic Statistics Data Analysis & Inference (CGS602A), Experiment Design & Analysis (CGS610A),Computational Cognitive Science (CGS786), Human-Centered Computing (CGS616), Bayesian Models & Data Analysis (CGS698C), Big Data Visual Analytics (CS661)
- BTech Courses:** Data Structures & Algorithms, Operating Systems, Computer Networks, Database Management Systems, Computer Organization & Architecture, Discrete Mathematics, Theory of Computation