Chidaksh Ravuru

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Github | LinkedIn | My publications | Portfolio | Google Scholar

EDUCATION

University of North Carolina, Chapel Hill — Chapel Hill, NC
Master of Science in Computer Science — *Aug 2024 - May 2026*

- **Advisors:** Prof.Snigdha Chaturvedi

Indian Institute of Technology Dharwad — GPA: 9.24/10 (top 10%)
Bachelor of Technology (Honours) in Computer Science and Engineering — *Nov 2020 - Apr 2024*

- **Advisors:** Prof.Prabuchandran K.J. & Prof.Rajshekhar Bhat

PUBLICATIONS

Accepted Papers

KDD-UG Consortium

- Agentic Retrieval-Augmented Generation for Time Series Analysis
  Chidaksh Ravuru*, Sagar Sakhinana, Venkataramana Runkana

Workshop Papers

- Reprogramming Foundational Large Language Models(LLMs) for Enterprise Adoption for Spatio-Temporal Forecasting Applications - **DAI and AI2ASE (AAAI Workshops)**
  Sagar Sakhinana, **Chidaksh Ravuru***, Sannidhi Geethan, Venkataramana Runkana
- Foundational Model for Electron Micrograph Analysis: Instruction-Tuning Small-Scale Language-and-Vision Assistant for Enterprise Adoption - **ML for Life and Material Science (ICML Workshop)**
  Sagar Sakhinana, **Chidaksh Ravuru***, Geethan Sannidhi, Venkataramana Runkana

Pre-Prints

- RESTORE: Graph Embedding Assessment Through Reconstruction
  Hong Yung Yip,**Chidaksh Ravuru***,Neelabha Banerjee,Shashwat Jha,Amit Sheth,Aman Chadha,Amitava Das

Thesis

Deep Learning on Images and Topic Modelling — [Report][CNN][LM]
Guide: Prof. PrabhuChandran K.J, IIT Dharwad

- Developed multiple Convolutional Neural Networks from scratch, attaining noteworthy **99.3% accuracy on CIFAR10** and a notable **54% accuracy on TinyImageNet** on the ResNet architecture. Employed various **data augmentation** and **domain generalization** techniques to improve accuracy and enhance diversity in the training data.
- Designed **Recurrent Neural Networks**, **Long Short-Term Memory networks** , and **Gated Recurrent Units** for tasks such as Character-Level Language Modeling, Sentiment Analysis of sentences, achieving a remarkable **90% accuracy**, and implementing French to English language translation models.

PROJECTS

Question Answering — [Report]

- Developed a **two step retriever and reader configuratiion** for Question Answering. Used Facebook's DPR for passage retrieval with an **F1-score of 0.88** and Roberta for extracting the text from context received from the retriever.
- Utilized techniques such as **Synthetic Data Generation** and Question Similarity Matching to decrease the inference time of the queries.

Underwater communication using Deep Learning — [Report][Code]
Guide: Prof.Rajshekhar Bhatt, IIT Dharwad — *Aug '22 - Dec '22*

- Developed an autoencoder framework for end-to-end communication encompassing intermediate noise channels, including Gaussian Noise and fading channels.Utilized **Simultaneous Perturbation Stochastic Approximation (SPSA)** method to compute gradients when the channel exhibits non-differentiability.
- Conducted a comprehensive analysis comparing the final convergence point and the convergence time between **SPSA** and **Gradient Descent** optimization techniques.

Gibbs Sampling [Report][Code]
Guide: Prof. PrabhuChandran K.J, IIT Dharwad *Jan '22 - April '22*

- ◇ Solved System of Linear Equations using **Conjugate Gradient** where the search directions are sampled using Gibbs Sampling. With this algorithm we were able to arrive at the final solution set **faster than** using traditional **steepest descent** but we were slower than conjugate gradient.
- ◇ Compared the effect of **Collapsed Gibbs Sampler** with Normal Gibbs Sampler in **Topic Modelling using Latent Dirichlet Allocation (LDA)**.

EXPERIENCE

Student Research Intern at Indian Institute of Technology, Delhi (IIT D) Jan '24 - May '24
Guide: Prof.Chetan Arora *Delhi*

- ◇ Surveyed state-of-the-art **face recognition models applied to surveillance videos**. Identified limitations in existing models, especially in law enforcement scenarios, and proposed areas for future research under **Prof. Chetan Arora**.
- ◇ **Benchmarked dataset** comprising **150+ videos** of **50+ subjects** with variations in lighting, height and angle.

LLMs for Time Series Analysis May '23 - July '23
TCS Research *Bangalore*

- ◇ Investigated the application of **Graph Machine Learning** and **Large Language Models** for Time Series tasks, including **Time Series Forecasting** and **Missing Data Imputation**.
- ◇ Evaluated the potential of Large Language Models as a Universal Model for various Time Series tasks and **Published** key findings from this research at **KDD-UGC, 2024**.

Research Intern at AI Institute of University of South Carolina (AIISC) Jan '23 - Nov '23
Guide: Prof.Amitava Das and Prof.Seth, AIISC *Remote*

- ◇ Researched on evaluating existing **Graph Embedding** methods for large scale knowledge graphs through **Graph reconstruction** and published it on arxiv. Suggested new ideas and submitted required ablation studies supporting the ideas for retaining knowledge by merging different graph embeddings efficiently.

SCHOLASTIC ACHIEVEMENTS

- ◇ Selected for **Google Research Week 2024, Bengaluru.**
- ◇ Selected for Machine Learning Summer School (MLSS) 2022 Krakow, Poland. Research Statement
- ◇ Secured **12th place** in Inter IIT Techfest 2023 based on **Open-Domain Question Answering**.

TECHNICAL SKILLS

- ◇ **Programming Skills:** C, C++, Python, Java, Bash.
- ◇ **Python Libraries:** numpy, pandas, matplotlib, seaborn, scipy, sklearn, pytorch and tensorflow.
- ◇ **Scripts and Software Skills:** HTML, CSS, Javascript, NodeJS, React, PHP, MySQL, LaTeX, Git, Docker
- ◇ **RESTful API:** LAMP (Linux, Apache, MySQL, Php/python) , Django

POSITIONS OF RESPONSIBILITY

Teaching Assistant Aug '23 - Dec '23

- ◇ Teaching Assistant for Software Systems Lab.
- ◇ Teaching Assistant for Introduction to C and Python Programming courses.

SPACE DATASCIENCE CLUB SECRETARY Dec '21 - Mar '23

- ◇ Directed a team of 30 members, driving data science initiatives focused on space research and preparing space data for academic and research use. Led hands-on workshops on Python and data visualization, training over 50+ First-year and Sophomore students to enhance their coding and analytical skills.

INSTITUTE INNOVATION CLUB Jan '22 - Jan '23

- ◇ Led an IoT event, Nexus, focused on soil moisture prediction, as part of the institute's annual tech fest, Parsec 2022, engaging over 50 participants. Coordinated and organized technical talks and hands-on workshops for an audience of 100+ attendees, ensuring smooth event execution and active participation.