Manav Nitin Kapadnis

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Education

Carnegie Mellon University — Pittsburgh, PA
Master of Science in Intelligent Information Systems (MIIS), School of Computer Science — *Dec 2025*

Coursework: Introduction to Machine Learning, Advanced Natural Language Processing (ANLP), Multimodal Machine Learning, NLP (TA)

Indian Institute Of Technology Kharagpur — Kharagpur, India
Integrated Dual Degree (B. Tech + M. Tech) in Electrical Engineering; Minor in Computer Science; ***CGPA: 9.01/10*** — *May 2024*

Honors: Institute Order of Merit, Prof G.S. Sanyal Cup
Coursework: Probability and Stochastic Processes, Linear Algebra in Signals & Systems, Foundations of Deep Learning

Publications

- B. Mohapatra*, **M.N. Kapadnis***, et al., and J. Cassell - Evaluating the Effectiveness of Large Language Models in Establishing Conversational Grounding : **Under-Review at EMNLP 2024**
- A. Nandy*, **M.N. Kapadnis***, et al., and N. Ganguly - FastDoc: Domain-Specific Fast Pre-training Technique using Document-Level Metadata : **Transactions on Machine Learning Research (TMLR) in May 2024**
- **M.N. Kapadnis***, S. Patnaik*, et al., and D.Sheet - SERPENT-VLM: Self-Refining Radiology Report Generation Using Vision Language Models: **Clinical NLP workshop at NAACL 2024**
- A. Nandy*, **M.N. Kapadnis***, et al., and, and N. Ganguly - CLMSM: A Multi-Task Learning Framework for Pre-training on Procedural Text: **EMNLP-Findings 2023**
- A. Mullick*, A. Nandy*, **M.N. Kapadnis***, et al. - An Evaluation Framework for Legal Document Summarization : **LREC 2022**
- A. Mullick*, A. Nandy*, **M.N. Kapadnis***, et al. - Fine-grained Intent Classification in the Legal Domain : **Scientific Document Understanding Workshop at AAAI 2022**

Experience

OncoLLM Team | Triomics Research — Jan 2024 – April 2024
Research Engineering Intern — *Remote*

- Engineered a state-of-the-art **OncoLLM** model using Qwen2 family of LLMs with expertly curated, human-annotated clinical trials data
- Coordinated with annotators and nurses in San Francisco hospitals to curate high-quality oncology datasets for training and evaluation.
- Implemented a comprehensive comparative analysis of performance across various SoTA LLMs and fine-grained oncology NER tasks.

Conversational Grounding Acts Understanding in Large Language Models | ALMAnaCH Team | Inria — June 2023 – Aug 2023
NLP Research Intern | Guide: Prof. Justine Cassell, Research Director — *Paris, France*

- Devised a comprehensive **conversational grounding** dataset to evaluate across state of the art LLMs using diverse perplexity metrics
- Achieved **100%** accuracy in GPT-4's perplexity tests for Repair and **80%** for Reference Ambiguity, compared with GPT-3.5 and Llama.
- Concluded that GPT-4's high conversation grounding performance ratios suggests a promising direction for future dialog system research.

AI Research & Development Team, AWL Inc. — May 2023 – June 2023
Machine Learning Intern — *Remote*

- Spearheaded an SSL project for Re-Identification, and enhancing pre-training with a novel similarity-based preprocessing pipeline
- Optimized PA-100K dataset by **20%** using a K-NN cosine similarity deduplication pipeline and achieved Rank@1 score of **0.376** with ViT
- Implemented **Soft Mixture of Experts** achieving **30%** improvement over company's state of the art performance in Age prediction

Noisy Multi-view Contrastive Learning for top-K Recommendation | Sony Research India — Dec 2022 – May 2023
Data Science Intern — *Bangalore, India*

- Achieved **8.77% increase** in NDCG@20 by developing a **knowledge-aware recommendation system** using graph attention networks
- Improved existing models with noise injection strategy achieving **0.279** NDCG@20 score and **0.4156** MRR@20 score on ML-100K dataset
- Optimized using a noise injection strategy, and achieving **2.2%** rise in Recall@20 on ML-100K and **11.13%** leap in MRR@20 on ML-1M

Projects

Domain-specific Fast Pre-training Method Using Document Level Metadata | IIT Kharagpur | TMLR 2024 — Aug 2021 - Jan 2022
Guide: Prof. Pawan Goyal and Prof. Niloy Ganguly — *Kharagpur, India*

- Devised a **fast pretraining strategy** for transformer based document encoder using **document metadata** and **product taxonomy**
- Proposed a novel loss function by combining **triplet margin** (anchor, similar & dissimilar documents) and **hierarchical loss**
- Achieved **1%** increment in Macro F1 score by leveraging **FPDM BERT, RoBERTa** models on QA datasets like SQuAD 2.0, TechQA

Racism and Violent Incidents Detection in Historical Archives | Rutgers University — Nov 2021 – Jan 2022
Guide: Prof. Kiran Garimella (Rutgers, Ex-MIT) and Prof. Aaditya Dar (ISB, Hyderabad) — *Remote*

- Conducted an analytical study of violent incidents throughout the country over a period of **100** years with the help of newspaper articles
- Achieved an accuracy score of **94.5%** by implementing **BART**, a pre-trained Transformer as classifier of violent and non-violent articles
- Analysed the causation of violent incidents and riots in the country by collaborating with a team from **ISB Hyderabad** and **MIT**

Skills

Programming and OS: C | C++ | Python | LATEX | MATLAB | SQL | Windows | Linux | MacOS |
Libraries and Frameworks: TensorFlow | PyTorch | Numpy | Pandas | SciPy | Matplotlib | Scikit-learn | HuggingFace | Plotly | Coreflow |