Hriday Ranka

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EDUCATION

NYU Courant - Graduate School of Arts and Sciences — **New York, USA**
Master of Science in Computer Science — *Sept 2025 - May 2027*

Dwarkadas J. Sanghvi College of Engineering — **Mumbai, India**
Bachelor of Engineering in Computer Science, CGPA: 9.1/10 — *Oct 2021 - May 2025*

EXPERIENCE

SimPPL — **Boston, USA**
Research Engineer — *Oct 2023 - Dec 2024*

- Conducted a comprehensive analysis of 9,920 misinformation articles from the EUvsDisinfo database; built an automated data pipeline to collect and process 1.3M+ messages across 46 seed Telegram channels.
- Mapped a sub-network of 4,200+ channels and 1,700+ forwards by applying BERT for multilingual text processing and Louvain clustering to detect modular communities; developed a novel bridging metric combining centrality and clustering measures, iterated through 1,000 weight combinations to identify the most influential cross-community nodes in disinformation flows.
- Co-authored a study on deepfake detection and election integrity, leading the evaluation of GAN architectures (CycleGAN, StyleGAN, AttGAN, WGAN) across accuracy, usability, security, and efficiency to assess vulnerabilities in electoral contexts.
- Designed and co-developed a cross-platform Digital Safety Interventions Framework (focus, scope, driver, user journey), applying it to TikTok, YouTube, and Instagram and building a companion website to standardize evaluation and guide safer intervention design.

PUBLICATIONS

- C. Vergara, **H. Ranka**, N. Kothari, J. lalwani and S. Mehta. **A Framework for Digital Safety: Designing Social Media Interventions.** Presented at the Research Conference on Communication, Information & Internet Policy, 2025. [SSRN]
- **Telegram Disinformation Ecosystem**
  - D. Shah*, **H. Ranka***, S. Mehta and L. Hui Xian Ng. **Bridging Nodes and Narrative Flows: Identifying Intervention Targets for Disinformation on Telegram.** [Arxiv]
  - D. Shah*, **H. Ranka***, S. Mehta and L. Hui Xian Ng. **An Analysis of Telegram's Disinformation Ecosystem**. Poster presented at the Stanford Internet Observatory, Stanford Trust and Safety Conference 2024. [Poster]
  - R. Sannikov, E. Brichetto, D. Shah*, **H. Ranka***, S. Mehta and L. Hui Xian Ng. **Mapping Disinformation Pathways: A Network-Theoretic Exploration of Telegram's Ecosystem**. Presented at the Underground Economy Conference 2024, the Council of Europe, France. [Slides]
- **H. Ranka***, M. Surana*, N. Kothari*, V. Pariawala*, P. Banerjee*, A. Surve*, S. Sankepally*, J. Lalwani, R. Jain, and S. Mehta. **Examining the Implications of Deepfakes for Election Integrity**. AI for Credible Elections workshop, AAAI, 2024. [Arxiv] [Slides]

TECHNICAL SKILLS

Programming Languages: Python, Rust
Libraries and Tools: HuggingFace, LangGraph, PyTorch, TensorFlow, spaCy, NLTK, Transformers, XGBoost, Jupyter, Matplotlib, Pandas, Docker, Git

PROJECTS

EmbedMatch: A Context-Driven Candidate Ranking System using Graph Embeddings, Fine-tuned LLaMA-3.2 (3B) on a bipartite graph constructed from a synthetic resume–job dataset generated with Google Gemini 1.5 Flash Pro. Designed a hybrid ranking function combining cosine similarity with Maximal Marginal Relevance (MMR) to optimize semantic accuracy and diversity. Produced structured candidate–job fit reports capturing skill alignment, gaps, and transferable strengths. [Hugging Face]

Street Fighter using Reinforcement Learning, Implemented a reinforcement learning model using Proximal Policy Optimization (PPO) to enable autonomous gameplay in Street Fighter II: Special Champion Edition, developing a custom OpenAI-Gym environment [GitHub]

Visual Path Finder using Dijkstra and A* Algorithm, Created a graphical demo program that displays the operations of both algorithms, allowing for a side-by-side comparison of their efficiency and path finding results. [GitHub]