Rushendra Sidibomma

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Education

Indian Institute of Information Technology, Sri City **Dec. 2020 – June 2024**
Bachelor of Technology in Computer Science ***(Honors) - GPA: 9.57/10*** *Sri City, India*

Experiences

AutomationEdge Technologies **Jan 2024 – Present**
Machine Learning Research Engineer *Pune, India*

- Developed a **GenAI** service for extracting patient details and ordered services from patient discharge documents retrieved via healthcare portals focused on **Home Health Care**. Deployed in **4 major referral portals** in the United States.
- Devised a custom **keyword-based** classification algorithm that **reduced** the time taken to classify relevant pages in medical documents by **60%**. The efficiency of the algorithm cut down the **LLM costs** of the service by over **21%**.
- Built a fully automated solution for performing **ICD-10 coding** of medical documents for a leading insurance and billing agency. Designed a versatile approach for handling over **70,000 ICD codes** across **20+** hospital document formats.

Trustworthy AI Lab, Toronto Metropolitan University **May 2023 – July 2023**
Research Intern, Supervised by Dr. Reza Samavi (Associate Prof.) *Toronto, Canada*

- Proposed a novel relaxation of the **ReLU** constraints that optimized the time complexity of the non-convex optimization problem for certifying robustness by **47%** with an error of **less than 2%**. Research article in press for submission.
- Introduced a new metric for calculating the **true robustness** of a model with over **40% reduction** in computational overhead. Designed and implemented experiments to validate the new metric across all benchmark approaches.

Robotics Lab, IIIT Sri City **August 2022 – January 2024**
Undergraduate Research Assistant, Supervised by Dr. Rakesh Sanodiya (Assistant Prof.) *Sri City, India*

- Proposed a **novel** approach for unsupervised domain adaptation in **AlexNet** which improved the alignment of the source and target images in the feature space. The resulting model generated **11%** more distant class-clusters.
- Improved the classification accuracy across all tasks of **Office-31** dataset by **2%** using the proposed training framework.

Publications

- **R. Sidibomma** and R. K. Sanodiya, "Learning Semantic Representations and Discriminative Features in Unsupervised Domain Adaptation," 2023 11th International Symposium on Electronic Systems Devices and Computing (ESDC), Sri City, India, 2023, pp. 1-6, doi: 10.1109/ESDC56251.2023.10149872.

Projects

Knowledge Management Application | *Django, Retrieval Augmented Generation (RAG), Azure* **October 2023**

- Developed a **multi-tenant RAG chatbot** using **open-source LLMs**, reducing the current production cost by **25%**.
- **Redesigned** the indexing schema on Azure cloud platform platform leading to a **30%** improvement in retrieval accuracy.
- Implemented query expansion techniques to ensure **high alignment** of LLM responses with the user's knowledge base.

Attendance Robot | *RaspberryPi, Python, MySQL* **January 2023**

- Built a **working prototype** of a **mobile autonomous robot** for real-time attendance logging of **80+** students.
- Developed a robust **Haar-Cascade facial recognition** model for real time detection, attaining an accuracy of **98%**.
- Devised a low-power logic to **avoid obstacles** and maintain its course by integrating the data from the **LIDAR sensor**.

Micro-Blogging Web Application | *MongoDB, Express, React, Node* **April 2022**

- Built an end-to-end web-application that enabled dorm students to connect with peers based on common interests.
- Created a unique card-based UI for allowing users to swipe story cards right or left based on preferences.
- Implemented **Redis caching** to fetch posts and ensure seamless user experience. Setup **CI/CD** using **Github Actions**.

Technical Skills

Languages: Python, C/C++, HTML/CSS, JavaScript, SQL, MATLAB
Technologies/Frameworks: Linux, PyTorch, Django, Git, Docker, Bash

Leadership / Extracurricular

- Received funding of **CAN $9,000** as a Mitacs Research Intern for a **12-week on-site** research assistantship in **Canada**.
- Progressed to **President** of AI/ML Club of university — delivered **7+ presentations** and **mentored 20+ students**.
- Attended **9+ MUNs** as a delegate and **Chaired** the institute's inaugural MUN —**managed 30+ delegates**.