SARANG SRIDHAR

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Education

University of Pennsylvania   **2024 - 2026**
M.S.E in Computer and Information Sciences   *Philadelphia, PA*
Birla Institute of Technology and Science Pilani   **2020 - 2024**
B.E in Computer Science and Engineering   *Pilani, India*

Experience

University of Pennsylvania | Graduate Research Assistant

Advisor: Prof. Insup Lee   **Jan 2025 – Present**
- Building a **general agent for ophthalmology**, using **reasoning-oriented reinforcement learning** to train the agent to obtain, retrieve, or create context for a base LLM, enabling accurate diagnoses through multimodal reasoning

Advisor: Prof. Kevin Johnson   **Aug 2024 – Dec 2024**
- Designed an **evaluation framework** to benchmark **SOTA LLMs** in real-time summarization of clinical conversations
- Developed a system that enhances real-time summarization by improving information extraction throughout the conversation. **Published at the AAAI 2025 workshop on GenAI4Health**.

Penn Medicine | Undergraduate Research Intern, Advisor: Prof Walter Witshcey   **Aug 2023 – Dec 2023**
- Developed a **class-agnostic few-shot segmentation algorithm** using **SAM** to segment the liver from **2000+** unlabelled MRI scans, leveraging semantic correspondence to generate point prompts and achieving a **mIoU of 71%**
- Finetuned the Total Segmentator model to segment the heart in CT scans of patients with Lipomatous Metaplasia, **automating the removal of 80%+ noise** and fat quantification

Philips Healthcare | Research Intern   **Jun 2023 – Aug 2023**
- Developed inference pipelines for segmentation of lung nodules on Chest CT scans and disease detection on Lung XRays
- Ensured the efficient scheduling of a large number of inference requests by **parallelizing various steps to maximally use GPUs** with Docker and PyTorch in the deployment of the models leading to up to **3x faster performance**.
- Code transferred to servers in Philips Middle East and South Asia and run on over **1.8 million CT scan images**.

Carscan.ai | Web Development Intern   **May 2022 – Jul 2022**
- Built a **dashboard** in React and integrated REST APIs through which the product team could quickly update the web app without having to approach any developers; **Reduced 2+ weeks turnaround time** in app updates.

Projects

Sentence Composition Analyzer | Natural Language Processing, U. of Penn   **Aug 2024 – Sep 2024**
- Developed a high-performance **Hidden Markov Model**, implementing trigram models with Kneser-Ney smoothing and Viterbi decoding to categorize words based on their roles in sentences, achieving **94% accuracy**; Implemented an **out-of-vocabulary word recognition technique** using suffix trees, achieving a **75%** accuracy rate on unseen words.

Lung Cancer Detection and Segmentation | Link   **Aug 2022 – May 2023**
- Worked with Prof Vinay Chamola, BITS Pilani, to establish a strong baseline for automatically identifying annotated CT scan images of patients (which are usually chosen by medical professionals); Proposed a **feedback loop mechanism** leveraging downstream cancer detection to refine annotation prediction, achieving **70% accuracy**

ERPlag Custom Compiler | Link   **Feb 2023 – Apr 2023**
- Created a compiler for a custom language (ERPlag) **in C**, with specially designed data structures & algorithms for **optimized memory consumption** & **reduced compile time**; Built the lexer, parser, semantic analyzer, and code generator modules and **reduced generated assembly code size by 25%** through various optimization techniques.

The Studyzone Platform | Link   **Oct 2021 – Dec 2021**
- Leveraged Redux and React to develop a student productivity app for **crowdsourcing academic resources**. The app has **3000+ verified documents** and **700+ GB of lecture recordings** to serve students in the university.

The Taxicab Web Dashboard | Link   **Jan 2022 – Mar 2022**
- React-based dashboard, integrated with REST APIs for the universities' taxicab service admins to analyze real-time ride statistics and manage rates/packages. This service has **750+ completed trips** and helps **2500+ students**.

Technical Skills

Languages: Python (PyTorch, Tensorflow, Pandas, Numpy, Django), Javascript (Node.js, React.js, Next.js), C, C++, Java
Tools: AWS, Linux, Git, Firebase, Postman, Docker, OpenCV, MONAI

Relevant Coursework

Graduate: Natural Language Processing, Machine Learning, Theory of Computation, Advanced NLP, Big Data Analytics
Undergraduate: Deep Learning, Data Structures and Algorithms, Image Processing, Database Systems, Operating Systems
Teaching Assistant: Data Structures and Algorithms, BITS Pilani   **Aug 2022 – May 2023**