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*

Relevant Coursework

- Data Structures
- Operating Systems
- Image Processing
- Linear Algebra
- Computer Networks
- Compiler Construction
- Deep Learning
- Database Systems

Experience

University of Pennsylvania | Research Intern, Advisor: Prof Walter Witshcey **Aug 2023 – Jan 2024**

- Developed a **class agnostic few-shot segmentation algorithm** using the segment anything model (SAM) to segment the liver from the unlabelled MRI scans of **over 2000 patients**; The algorithm generates point prompts for SAM by **analyzing semantic correspondence** between unlabeled and labeled images and achieves a **mIoU of 71%**.
- Worked on improving the prompt generation process by finetuning SAM to be more adept at identifying similar features across images.
- Finetuned the Total Segmentator model to segment the heart in CT scans of patients with Lipomatous Metaplasia (fat deposition); automated the removal of **over 80% of noise** and quantification of fat content.

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

Lung Cancer Detection and Segmentation | Link **Aug 2022 – May 2023**

- Worked with Prof Vinay Chamola, BITS Pilani, to apply **transfer learning** in PyTorch to finetune a large pre-trained convolutional neural network, HR-Net, to the LIDC-IDRI dataset of CT scans to detect & segment lung cancer nodules.
- Established a strong baseline to automatically identify annotated CT scan images of patients (which are usually chosen by a medical professional) by experimenting with data augmentation techniques, SOTA image classification architectures like vision transformers and ResNeXt, and various training recipes; achieved above **60%** accuracy.
- Proposed a **feedback loop mechanism** through which both annotation prediction and downstream cancer detection are used to improve each other; increased accuracy to approx. **70%** for annotation prediction.

The Taxicab Web Dashboard | Link **Jan 2022 – Mar 2022**

- A web dashboard for administrators of BITS Pilani's affiliate taxicab service to analyze overall cab ride statistics in real-time and offer students better rates. This service has **750+ completed trips** and helps **2500+ students**.
- Integrated REST APIs in React to help admins create trip packages, and offer different rates for different cab types.

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**

- A student productivity app for **crowdsourcing academic documents** with quality control via user-provided feedback
- Leveraged Redux and React to enable users to add courses, view documents, and upload their own documents across different platforms. The app has **3000+ verified documents** to serve **5000+ students** in BITS Pilani.

Positions Of Responsibility

Teaching assitant, CS F111 Computer Programming, CS F211 Data Structures, BITS Pilani **Summer 2022-Spring 2023**

- Conducted laboratory sessions, curated course content, and built and managed evaluation infrastructure

Mentor, Peer Mentorship Program, BITS Pilani **Sep 2021 – Aug 2022**

- Selected based on academic record, ethics, and peer review to guide 6 freshmen in academic and co-curricular pursuits