Ashutosh Sathe

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Education

- **Indian Institute of Technology, Bombay** — Mumbai, India
  Master of Science in Computer Science — *July 2021 – December 2023(Expected)*
- **College of Engineering, Pune** — Pune, India
  Bachelor of Technology in Computer Engineering; CGPA: 9.1/10 — *July 2016 – June 2020*

Experience

- **Aspect Ratio** — Pune, India
  Analyst — *July 2020 - September 2020*
  COVID-19 modeling: Used temporal machine learning methods to model COVID-19 cases in various countries.
- **Indian Institute of Science, Bangalore** — Bangalore, India
  Summer Research Intern @ Video Analytics Lab — *May 2019 - July 2019*
  Transferable adversarial robustness: Explored a robust, model-independent preprocessing method that aims to remove adversarial noise prior to inference in order to get "free" adversarial robustness for any arbitrary model.
  Robustness without adversarial training: Studied a simple regularizer based training method that was $\sim 8\times$ faster than adversarial training but offered comparable robustness gains against "Spatial Transform Attacks".
- **Indian Institute of Technology, Bombay** — Powai, India
  Software Development Intern @ Content Team IITBombayX — *May 2018 - July 2018*
  Advanced HTML XBlock for Open edX platform: Worked on an "XBlock" that allows the course editor to incorporate full fledged HTML + CSS + JavaScript content into an Open edX course. The XBlock also features an HTML editor with autocomplete, autoformatting and live preview and takes appropriate steps to properly sandbox the HTML content from interfering with Open edX core components. [code]

Programming Skills

Python, C++, C, PyTorch, JAX(beginner), CUDA, OpenGL, GTK+3, Godot

Research

"Diverse Parallel Data Synthesis for Cross-Database Adaptation of Text-to-SQL Models" [**EMNLP 2022**]
Abhijeet Awasthi, **Ashutosh Sathe**, Sunita Sarawagi [code] [arxiv] [poster]

Projects (https://ashutoshbsathe.github.io/projects/)

- **TestChamber**: *Course Project (Advances in Intelligent and Learning Agents), Advisor: Prof. Shivaram Kalyanakrishnan* – TestChamber is a Gym environment for training RL agents in the popular physics-based puzzle game Portal 2. The environment can wait for an arbitrary amount of time allowing agent to take as much time as required before choosing next action. Also studied the generalization of an agent trained on one puzzle to a semantically equivalent but slightly longer puzzle. [code] [report] [presentation]
- **GLO-Caption**: *Course Project (Advanced Machine Learning), Advisor: Prof. Sunita Sarawagi* – Extended generative latent optimization [Bojanowski *et al.*, 2017] for image captioning. Obtained the best results on Flickr8K dataset with a ConvNet as an image encoder and GPT-J as a text encoder. We found that our image-text embeddings were far richer when compared to standard end-to-end image captioning models. Due to our flexible problem formulation, the system can also be unintentionally be used as a text-to-image generator. [code] [report]
- **yacv**: *[125+ stars on GitHub]* **Y**et **A**nother **C**ompiler **V**isualizer is a tool for visualizing step-by-step parsing process of typical LL(1) and LR parsers. This is a python package that can be used for visualizing syntaxtree, LR state automaton (using GraphViz), parsing table and step-by-step parsing process (as a video using manim or ManimCE) given a context free grammar and a string. [code] [docs] [demo]
- **scarpet-nn**: *[125+ stars on GitHub]* A set of tools and libraries to run binarized neural networks in Minecraft. Allows the user to convert a PyTorch model to an equivalent scarpet model. Developed a flexible (can be run client as well as server-side) neural network API in scarpet – a functional like programming language that allows running code *in* Minecraft. Supports conv and linear layers for now. [code] [docs] [demo]