Abhinav Gupta

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Education

- **New York University** — **New York, NY**
  Masters in Computer Science (**GPA:** 3.97/4.00) — Jan 2021 - Dec 2022
  Relevant Coursework: Natural Language Processing and Understanding, GPU, Deep Learning, MultiCore Processors
- **Indian Institute of Technology Guwahati** — **Guwahati, India**
  Bachelors in Mathematics and Computing (**GPA:** 8.06/10.00) — July 2015 - June 2019
  Relevant Coursework: Linear Algebra, Parallel Computing, Databases, Machine Learning, Probability, Calculus, Statistics

Experience

- **New York University** — **New York, NY**
  Research Assistant | Multimodal Deep Learning | Prof. Narges Razavian - NYU Langone Health — July 2022 – Present
  - Building a GPT style open-source benchmark for Electronic Health Records (EHR).
  - Skills: Healthcare, Multimodal DL, Benchmarking Tasks and Dataset, Huggingface
- **Samsung Electronics** — **Bangalore, India**
  Senior Software Engineer | 5G Mobile Communication Systems — June 2019 – July 2021
  - Architected and automated the issue management pipeline for 5G Systems team which saved around 1 hour of daily repetitive work per team engineer.
  - Developed sensor beam management driver code for proper 5G network beam selection.
  - Optimized and ported in-house multi-core Real-Time Operating System (RTOS) for Samsung LSI 5G modems.
  - Implemented MediaTek chipset's Mobile Broadband Interface Model (MBIM) extension for Samsung.

  R&D Summer Intern | Advanced Technology Labs — May 2018 – July 2018
  - 3-D handwriting recognition with a wearable input system i.e. Samsung Gear Watch.

Projects

- **ML & Privacy in Healthcare:** Studying the impact of pre-training and fine-tuning a multi-modal (chest radiograph images + clinical text reports) architecture in a federated learning setup and comparing against training in centralized setting.
- **Domain Adaptation of Pre-trained Language Models - NLP:** Explored domain adaptation and few-shot learning capabilities of semi-large PLMs like GPT-2 and CTRL, to improve performance on low resource downstream tasks without having to deal with large computation power needs. (Supervisor: Prof. Sam Bowman)
- **Semi-Supervised Learning for Object Detection - Computer Vision:** Competed and finished in first position on object detection task leaderboard. We employed a combination of several self-supervised models and object detector heads and concluded that Barlow Twins + Deformable DETR performed the best. (Supervisor: Prof. Yann LeCun)
- **Relation Extraction Survey - NLP:** Analyzed and implemented several Deep Learning methods to recognize drug-drug interactions (relation extraction) that appear in clinical texts like DrugBank and MEDLINE.
- **Generative Adversarial Network:** Transferring the pose of a given person to a target pose using a GAN network.
- **Toy Language Interpreter:** Built a python based toy language interpreter using regex and various OOPS features which could efficiently handle nested loops, basic function calls and several other compound statements.
- **Operating System Extensions:** Built a prototype linker and scheduler to replicate general OS functionalities. Also implemented a basic linux shell from scratch in C programming language which could efficiently handle job control and pipelining.
- **Database modelling of Twitter Dataset - NoSQL:** Implemented an efficient database model in Cassandra and Neo4j to execute queries on twitter dataset using Python.

Skills and Leadership Experiences

Programming Languages C, C++, Python, Java *, R, Bash, JavaScript *
ML/DL/CV Frameworks PyTorch, Tensorflow, OpenCV *
Miscellaneous MySQL, NoSQL, CUDA *, OpenMP *, MPI *, Git, Matlab, HTML, CSS * Elementary Proficiency

- **Graduate Teaching Assistant (NYU):** Natural Language Processing, Numerical Computing, and Algorithmic Problem Solving
- **Placement Coordinator 2017-19:** Worked as a member of the Centre for Career Development, IIT Guwahati to plan and coordinate full-time Jobs and Internships of around 1000 students across 11 departments.