Siddharth Gandhi

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Education

Carnegie Mellon University - School of Computer Science **Expected Dec. 2024**
Master's of Science in Intelligent Information Systems (ML & NLP) *Pittsburgh, PA*
- Relevant Coursework: Machine Learning, Advanced NLP, Search Engines

Vellore Institute of Technology - School of Computer Science & Engineering **July 2023**
Bachelor's of Technology in Computer Science & Engineering *Vellore, India*
- Department Rank #3 out of 1500+ students, with a CGPA of 9.69/10

Research Experience

Technical University of Munich **June 2022 – Aug. 2022**
Research Intern (Advisor: Dr. Felix Dietrich) | *talk, report* *Munich, Germany*
- Investigated if neural nets can learn Stochastic Differential Equations (SDEs) modelling the growth of aerosol clouds.
- Automated Blender simulations of cloud dispersion & preprocessed the simulated images with U-Net (PyTorch).
- Modelled the underlying SDE of cloud trajectories using a neural net (Tensorflow) with a custom loss function based on the Euler Maruyama method for numerical approximation of SDEs (baseline).
- Achieved 80% lower MSE compared to baseline by finetuning neural net hyperparameters & applying Kernel Density Estimator (KDE) to compensate for class imbalance in the dataset.

Technical Projects

Refpred - A Literature Recommender *(Bachelor's Thesis)* | *github, report* **July 2023**
- Engineered a research paper recommender which utilizes both semantics & citation history to enhance literature search.
- Acquired dense citation graph data by creating an asynchronous crawler to parse Semantic Scholar.
- Utilized SPECTER (a citation-informed transformer model) to generate dense vector embeddings from a paper's title + abstract & employed KNN to create baseline recommendations.
- Improved F1 @ 20 by 70% compared to baseline on test set by incorporating neural reranking on the KNN candidates (based on Learning to Rank), to add additional historical citation context.

GradeAid - A Short Answer Grader | *github* **June 2022**
- Built a smart grading assistant to automatically evaluate short essay responses using NLP.
- Utilized Flask, LSTMs & Sentence Transformers (with cosine similarity) in a team effort, to build a web app which grades answers based on grammar, semantics & an answer key, to calculate scores & highlight key missing points.

PharmaVIT - A Pharmacy Management System | *github* **Dec. 2021**
- Created a responsive web app with Bootstrap, ExpressJS & MySQL to enhance a pharmacy's efficiency & operations.
- Collaboratively implemented features like inventory management, customer cart, expiry alerts, new medicine request, billing with invoice & AuthN/Z with login/signup, adhering to an incremental SDLC model.

PyBot - A Simple & Adaptable Chatbot | *github* **Dec. 2021**
- Co-developed a Tkinter app for a chatbot which can be adapted contextually by swapping the intents dataset.
- Implemented the bot by preprocessing inputs with NLTK to create bag of words & using a feed-forward neural net (PyTorch) for identifying the intent of a query, to return a corresponding response.

Skills

Languages: Python, C/C++, Javascript, Java, SQL | **Databases**: MySQL, MongoDB
Frameworks: PyTorch, SKLearn, NLTK, Tensorflow, AsyncIO, Pandas, Numpy, Matplotlib, Flask, ExpressJS, Git, Optuna

Leadership

Student Welfare Department **Oct. 2020 – July 2023**
Programme Representative *VIT, Vellore*
- Acted as a key liaison between students & administration, effectively addressing student grievances, like by spearheading curriculum reforms to consolidate semester projects, or helping suggest viable COVID-19 relief measures.

Awards & Achievements

(2019-23) Merit Scholarship & Award: For being consistently ranked in the top 5 of VIT CS Department securing Rank #1, #5, #3 & #3 respectively for all 4 years out of 1500+ students.

(2022) DAAD WISE Scholarship: Honored as one of 130 selected nationwide to pursue a fully-funded internship (by the German Government) at the Technical University of Munich, the top-ranked CS institute in Germany.