SOUMYA VADLAMANNATI

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EDUCATION

Carnegie Mellon University (CMU)

Master of Science in Computer Science (MS in CS)

2019-2021 4.0/4.0

International Institute of Information Technology Hyderabad (IIIT-H)

B. Tech with Honors in Computer Science & Engineering

2015-2019 9.73/10

EXPERIENCE

ML Engineer

Feb '21 – Present

Bloomberg AI

- **Data Platforms team:** Orchestrated the creation of a robust **streaming application**, processing 10+ million daily news events using Apache Flink SPaaS and Kafka..
- **LLM Applications team:** Developed **prompt workflows** for internal NLP use cases, delivering >20 internal prototypes leveraging large-scale Language Models (**LLMs**) like LLaMa, MPT, FLAN-UL2, FLAN-T5, and GPT-3.
- **Knowledge Extraction team:** Developed and implemented BERT-based models for **news sentiment analysis and market movement detection**. Led initiatives across the Model Development Lifecycle, collaborating with cross-functional teams to **gather requirements**, conduct **data analysis**, and deploy **scalable containerized machine learning solutions**.
- Implemented a Python library for **stratified data analysis and model evaluation**, utilized by >250 engineers at Bloomberg AI to streamline data sampling for continuous training.

ML Intern

May '20 - Jul '20

Bloomberg LAW ML

- Developed Prototypical networks for **Few-shot learning** for legal motion classification with a CNN feature extractor and a bi-LSTM based Embedding Network using PyTorch, keras and scikit-learn.
- Conducted **Legal Motion Classification** for Docket Analysis, utilizing techniques such as **Binary Relevance** and **Classifier Chains** in a Multi-Label setting.
- Implemented **unsupervised classification** using **Snorkel** and **semi-supervised classification** using only 1% of the data labels. Employed knowledge distillation to train a Logistic Regression model from BERT, succeeding in reducing inference time while maintaining BERT's F1 score.

Research Intern

May '18 - Jul '18

Adobe Research

- Worked on Dynamic Web Experience Augmentation based on local and global content preferences using PyTorch, Tensorflow, scikit-learn and openCV.
- Built adaptive web pages, by employing LSTMs for future web page prediction using user analytics and web page content.
- Poster accepted at **IUI 2019** and Patent approved at Adobe Research USA.

PUBLICATIONS

Modeling and Detecting Company Risks from News: A Case Study in Bloomberg News

- Proposed a new company risk categorization framework, defining 7 types of risk. Annotated a new dataset of 744 news articles used to benchmark state-of-the-art NLP models by prompting and fine-tuning. Analyzed over 277K Bloomberg news articles and presented Industry and Company level case studies to demonstrate real life applications of the framework. ***Accepted at NAACL 2024***

Multilingual Few-Shot Learning via Language Model Retrieval

- Conducted a comprehensive study of applying a semantic-based sampling strategy using transformer LMs like GPT-J NEO and XGLM. Evaluated our approach on a wide range of multilingual and cross-lingual NLU tasks like intent detection and sentiment classification in four different languages: English, French, German, and Spanish.

Sequence learning using Content and Consumption Patterns for User Path Prediction

- Introduced a novel model for future/next page prediction in online user journeys. Model uses a combination of doc2vec webpage representations with an LSTM-based neural network to mine patterns from users' online navigational paths combined with their content preferences. ***Published at IUI 2019***

Towards a better management of urban traffic pollution using a Pareto max flow approach

- Proposed a Pareto Flow Algorithm for Real Time Traffic Congestion in Urban areas, performing a case study on New York City using SUMO (Simulation of Urban MObility) ***Published in Transportation Research Journal 2020***

** All papers listed are multi-author publications.*

PROJECTS

MULTIMODAL HATE SPEECH DETECTION IN MEMES USING URBAN DICTIONARY

- Proposed and implemented "ConcatBERT-UD" to classify memes in the Facebook(Meta) AI Hateful Meme dataset. Used meme caption noun phrases and meme image Resnet-152 features to attend over slang definitions from urban dictionary.
- Achieved a >3pt increase in AUC-ROC and >1 pt increase in accuracy over the ConcatBERT baseline.

AFFORD TO BUILD: LEARNING SCENE AFFORDANCES TO SYNTHESIZE NOVEL FLOORPLANS

- Built a dataset(Scene-Afford 3D) using positive samples of indoor scenes from the SUN RGB-D dataset. Constructed realistic negative samples by applying physics-consistent transforms on affordable indoor scenes.
- Trained "Affordance Net" on Scene-Afford 3D to assign affordance scores to be floorplans - used by a Stochastic Hill-Climbing synthesis algorithm to converge to optimal floor configurations.

SKILLS

Programming: Python, C/C++, Java, MATLAB, Bash
Frameworks: PyTorch, Kubernetes, Docker, Apache Kafka, Apache Flink, PySpark