Adithya V Ganesan

v.adithyaganesan@gmail.com | adithya8.github.io | github.com/adithya8

EDUCATION

The State University of New York at Stony Brook   GPA: 3.94/4.0
PhD in Computer Science, advised by Prof. H Andrew Schwartz   *Present*

The State University of New York at Stony Brook   GPA: 3.94/4.0
Masters in Computer Science, advised by Prof. H Andrew Schwartz   *May 2021*
- Thesis: *Empirical Evaluation of Pre-Trained Transformers for Human-Level NLP: The Role of Sample Size and Dimensionality*

Anna University, Chennai India   GPA: 8.1/10
Bachelor of Engineering in Computer Science   *May 2019*

RESEARCH INTERESTS

Natural Language Processing, Machine Learning, Embedding Analysis, Human Centered NLP, Model Compression

EMPLOYMENT

Graduate Research Assistant   *Dec. 2020 – June 2021*
Non-Proliferation & National Security Dept. | US Dept. Of Energy
- Developed a general purpose python library for modelling illicit intent detection through sequence of language queries
- Implemented self-supervised learning for early prediction with capabilities to integrate expert in the loop

Data Scientist Intern   *June 2018 – Jan. 2019*
Motorq | Connected Car Data Platform
- Carried out analysis on a number of vehicle parameters for more than 10,000 vehicles collected over 3 months
- Devised a streaming algorithm to detect refueling events with constant computation and memory, that's robust to noise caused by the after-market devices as well as the mechanical floats in the fuel tanks
- Characterized discrepancies caused by after-market devices in the data for future tagging

Undergraduate Research Assistant   *Jan. 2017 – May 2019*
Solarillion Foundation | Research Foundation
- Research focused on building models for non-stationary time-series in volatile systems
- Headed a team to build a day ahead food sales prediction model for India's leading multiplex chain, saving 170 units per day

RESEARCH PUBLICATIONS

Empirical Evaluation of Pre-trained Transformers for Human-Level NLP: The Role of Sample Size and Dimensionality [Full Paper, North American Association of Computational Linguistics 2021]
- Investigated the relation b/w sample size, embedding dimensions and the performance of language models on human-level tasks like mental health prediction
- Proposed a method to improve the performance of transformers with fewer than $\frac{1}{6}$th of the original dimensions

DeepTrace : Generic Deep Framework for Cross-Domain Univariate and Multivariate Time Series Forecast [International Work-Conference on Artificial Neural Networks 2019]
- Framework to model a variety of time series data with a novel training method by using future context
- Analyzed different deep network components' ability to capture various properties in time series on several domains of data

Forecasting Food Sales in a Multiplex using Dynamic Artificial Neural Networks [Computer Vision Conference 2019]
- Built a day ahead prediction model to reduce food wastage in a multiplex using *online learning* with deep neural networks
- The proposed model saved 170 food units per day on average, translating to $450,000 over 9 months

CURRENT PROJECTS

Improving Efficiency of Attention Layers in Contextual Language Models
- Method to quantize attention Layers in 3 bits with near to no loss in task performance
- Analysis of sparsity in attention patterns across the layers of contextual language models to improve model compression

Fine-Tuning Transformers for Computational Social Science Applications
- Fine-Tuning a language model with RoBERTa as seed to capture the language use in social media
- Learning representations of social media specific tokens to analyze and leverage for computational social science applications

TECHNICAL SKILLS

Languages: Python, C/C++, MySQL, Shell, HTML/CSS, Javascript, LaTeX
Libraries/Frameworks: PyTorch, PySpark, Numpy, Matplotlib, plotly (& dash), Git, Hadoop, Docker
Hardware: Arduino, Raspberry Pi