

Maya Gambhir

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EDUCATION

University of Pennsylvania

BSE in Artificial Intelligence, GPA: 3.81, Rachleff Scholar

Philadelphia, PA

Aug. 2022 – May 2026

RESEARCH

Conformal Prediction for LLM Reasoning

Rachleff Scholar Research under Professor Surbhi Goel

January 2024 – Present

Philadelphia, PA

- Improving LLM performance on reasoning tasks by designing updated qualitative metrics for evaluating segmented LLM outputs
- Iteratively developing a novel scoring mechanism that accounts for dependence between claims, optimizing outputs for correctness and coherence, and applying conformal prediction techniques to obtain correctness guarantees on model outputs
- Presented as a poster at the **2024 NeurIPS Statistics For LLMs workshop**

Emotion Prediction for News Data

Penn Computational Social Science Lab

October 2023 – July 2024

Philadelphia, PA

- Applying the ChatGPT API and other machine learning models to do sentiment analysis on news data, iteratively adjusting api calls for effective quote extraction, calculating various error rates
- Providing weekly code updates to advisor, working collaboratively to debug and improve model performance
- Work presented at **2024 International Conference for Computational Social Science**

KNOWLEDGE AREAS

Machine Learning

Foundational knowledge of ML, with focuses on LLM inference and optimization

- Implementing and optimizing pre-trained versions of linear/logistic regression, decision trees, KMeans Clustering, standard neural networks, CNNs, RNNs, and Transformers
- Linearly parameterized models, least-squares model fitting via regression, linear and polynomial fit, AR models, validation, model selection and feature engineering and cross-validation

Mathematics and Theory

Concentrating in theoretical ML concepts; advanced calculus and linear algebra

- Sensitivity analysis and solving constrained and multi-objective least-squares problems by hand and with Python
- Applying probability, calculus and linear algebra techniques to prove machine learning theorems such as the representer theorem, uniform convergence and convergence of stochastic gradient descent

WORK EXPERIENCE

Software Engineering Intern

Munich Re

June 2023 – August 2023

New York City, NY

- Led the development of a new React-based front end for an insurance estimation API for internal and external use
- Completed detailed documenting on all aspects of the code base and implemented rigorous testing

PROJECTS

Movie Review Sentiment Analysis

2023

- Data preprocessing using PCA, WordNetLemmatizer and TfidfVectorizer, Adaboost with logistic regression/decision trees
- Implemented standard neural network with pytorch, visualized outcomes for both with varied hyperparameters and layers

CIFAR-10 Image classification

2023

- Training SoftMax regression and CNN in PyTorch using Cross Entropy Loss/Adam optimizer
- Implementing dataset shifts with rotation and grayscaling, visualized outcomes for both with varied hyperparameters and layers