Zhengguang Wang

Email: zw4re@virginia.edu Telephone: (434)422-2399

Summary

- **Languages:** Bilingual in English and Chinese, Intermediate French
- **Programming Languages:** Python, Java, C, R, x86 assembly language; HTML/CSS/Javascript
- **Relevant Packages:** PyTorch, Transformers, Pandas, Scikit-learn, Django, Flask
- **Research Interest:** Natural Language Processing, Explainable Deep Learning and Sensitivity Analysis
- **Personal Website:** https://zhengguangw.github.io/

Education

University of Virginia | Major in *Computer Science* and *Statistics* Graduation Date: Expected May 2024
Echols Scholar at the University of Virginia (top 5% at UVA), GPA 3.895/4.0, GRE 329/340

Research Experience

Information and Language Processing Lab | *CS Department, UVA* June 2023-
Research: *Consistency of Large Language Models' Political Leaning and Reliable Text Summarization*

- Applied Selenium and Beautifulsoup to scrape news headlines from Allsides, Breitbart, and the DailyBeast; queried OpenAI API with headlines and designed prompts with both GPT 3.5-turbo and GPT 4
- Used Pytorch and Transformers package to fine-tune a DistillBERT to classify the GPT outputs on UVA Rivanna HPC GPU, then applied Spearman rank test to calculate consistency of GPT outputs across prompts
- Applied LoRA method to fine-tune a Llama-7b for text summarization; plan to integrate Statistical NLP ideas such as POS tagging to reduce hallucination
- Involved in the ILP group effort to build a LLM Parameter Efficient Fine Tuning (PEFT) codebase

UVA-MLSys | *CS Department, UVA* June 2023-
Research: *Consistency and Performances of Perturbation-based Sensitivity Analysis Methods*

- Prepared the presentation of *Global Pervasive Computational Epidemiology (GPCE) Interpreting County-level Covid Infections using Deep Learning for Time Series* for IEEE ICDH'23; won the third prize
- Led a team to build an interactive project website with an embedded U.S. county map with Javascript D3 in which user could click on counties to compare ground truth and model predictions
- Submitted a Workshop paper *"Interpreting Time Series Transformer Models in Multi-Horizon COVID-19 Infection Forecasting and Age Sensitivity Analysis"* as a coauthor; conducted sensitivity analysis using methods like feature ablation and integrated gradients and trained time-series deep learning models for benchmarking
- Submitted a research statement "*Evaluation of Interpretability Methods for Time-Series Deep Learning with Sensitivity Analysis*" to AAAI'24 Undergraduate Consortium

Teaching Experience

Data Science Teaching Assistant | *Statistics Department, UVA* | Charlottesville, Virginia Aug 2022-Dec 2022
Teaching Machine Learning Algo, KNN classification, A/B Testing, Regression, and simulation in Python

- Held Office Hour twice per week to help students with statistical concepts (A/B Testing, sampling, unbiased estimator, type I error, etc.); assisted in lectures twice per week by answering in-class questions
- Taught data wrangling, control-flow, functions, and objects in Python

Professional Experience

Analyst Intern | *Local Energy Alliance Program* | Charlottesville, Virginia Jun 2022-Aug 2022
Web-Scraping with Python Selenium and Mapping with ArcGIS; Cleaning 7-year Solarize Program Data

- Used Python Pandas package to merge and tidy the 7-year Solarize Program Data; wrote Selenium scripts to retrieve county names and geographical coordinates from customers' addresses
- Utilized ArcGIS and geocoding to generate four interactive maps of LEAP sites in Virginia; conducted geo-spatial analysis and presented the finding to the Executive Director

Economic Analyst Intern | *China Minmetals Corporation* | Beijing, China Jun 2021-Aug 2021
Identifying Merger & Acquisition (M&A) pattern by conducting Time-Series and Hypothesis testing

- Accessed the S&P Database to retrieve M&A metadata such as case time, monetary amounts, minerals, locations; employed Python Pandas and Excel V-Lookup to clean data; made visualizations and numerical summaries to examine the spatial-temporal pattern; analyzed different countries' preferences in M&A
- Illustrated the global comparisons on a world map using Python Pyechart then compiled the findings and published a 16-page report on the monthly publication of Economic Research Institute

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Publications

- Evaluation of Interpretability Methods for Time-Series Deep Learning with Sensitivity Analysis
  Zhengguang Wang
  AAAI'24 Undergraduate Consortium, Feb.2024
- Interpreting Time Series Transformer Models and Sensitivity Analysis of Population Age Groups to COVID-19 Infections
  Md Khairul Islam, Tyler Valentine, Timothy Joowon Sue, Luke Neil Benham, **Zhengguang Wang**, Kingsley Kim, Judy Fox
  AAAI'24 Workshop AI4TS:AI For Time Series Analysis, Feb.2024

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Zhengguang Wang

Date Printed: **01/01/2024**

Issued / Mailed To:
ZHENGGUANG WANG

National Id: *****XXXX
Birthdate: 10/16/XX

Test Credits
Test Credits Applied Toward Arts & Sciences Undergraduate

Transferred to Term 2020 Fall as

COMM	1800	Foundations of Commerce	4.00

Other Test Credit 3.00
Test Credit Total: 7.00

Transfer Credits
Transfer Credit from Cornell University
Applied Toward Arts & Sciences Undergraduate
Transfer Credit Total: 4.00
Transfer Credit from Fudan University
Applied Toward Arts & Sciences Undergraduate
Transfer Credit Total: 11.00

Beginning of Undergraduate Record

2020 Fall
Academic disruption due to global pandemic. Default A-F grading option for all undergraduate classes. Students able to select CR=C or higher/GC=C- to D-/NC=no credit grading option prior to knowing final grade. Dean's List suspended for term.

School: College & Graduate Arts & Sci
Major: Arts & Sciences Undeclared

EGMT	1510	Engaging Aesthetics		A	2.0
Course Topic:		Sounds of Resistance			
EGMT	1520	Empirical Engagement		A	2.0
Course Topic:		How Do You Measure a Rainbow?			
STAT	2120	Intro to Statistical Analysis		A	4.0
ZFOR	3512	International Study		N	0.0
Course Topic:		Exchange			
Curr Credits		8.0 Grd Pts	32.000	GPA	4.000
Cuml Credits		8.0 Grd Pts	32.000	GPA	4.000

2021 Spring
Academic disruption due to global pandemic. Default A-F grading option for all undergraduate classes. Students able to select CR=C or higher/GC=C- to D-/NC=no credit grading option prior to knowing final grade. Dean's List suspended for term.

School: College & Graduate Arts & Sci
Major: Arts & Sciences Undeclared

CS	1110	Introduction to Programming		A	3.0
EGMT	1530	Engaging Difference		A	2.0
Course Topic:		Faith in Democracy?			
EGMT	1540	Ethical Engagement		A	2.0
Course Topic:		Faith in Democracy?			
ENWR	1510	Writing and Critical Inquiry		B+	3.0
Course Topic:		Writing about the Arts			
LPPL	3480	Leadership: US Policy to China		A	3.0
MATH	1320	Calculus II		A	4.0
ZFOR	3512	International Study		N	0.0
Course Topic:		Exchange			
Curr Credits		17.0 Grd Pts	65.900	GPA	3.876
Cuml Credits		25.0 Grd Pts	97.900	GPA	3.916

2021 Fall

School: College & Graduate Arts & Sci
Major: Arts & Sciences Undeclared

ECON	2010	Principles of Econ: Microecon		A-	3.0
PLCP	3500	Topics in Comp Politics		A	3.0
Course Topic:		Japanese Politics			
STAT	3080	From Data to Knowledge		A	3.0
STAT	3110	Foundations of Statistics		A+	3.0
STAT	3220	Intro to Regression Analysis		A	3.0
Curr Credits		15.0 Grd Pts	59.100	GPA	3.940
Cuml Credits		40.0 Grd Pts	157.000	GPA	3.925
Honor:		Dean's List			

2022 Spring

School: College & Graduate Arts & Sci
Major: Applied Statistics
Concentration: Data Science

CS	2100	Data Structures and Algo 1		A+	4.0
CS	2120	Discrete Math and Theory 1		A-	3.0
ECON	2020	Principles of Econ: Macroecon		A	3.0
ECON	3010	Intermediate Microeconomics		B+	4.0
FREN	1020	Elementary French II		A-	4.0
Curr Credits		18.0 Grd Pts	67.100	GPA	3.728
Cuml Credits		58.0 Grd Pts	224.100	GPA	3.864
Honor:		Dean's List			

2022 Fall
University-wide disruption. Student had option to select CR/GC/NC grading rubric. CR meets all degree requirements; GC meets limited requirements; NC is no credit (F). CR/GC/NC not included in GPA calculation.

School: College & Graduate Arts & Sci
Major: Applied Statistics
Concentration: Data Science

CS	3100	Data Structures and Algo 2		A-	3.0
FREN	2010	Intermediate French I		A	3.0
MATH	3350	Applied Linear Algebra		A	3.0
STAT	3120	Intro Mathematical Statistics		A	3.0
STAT	3250	Data Analysis with Python		A	3.0
UNST	3510	Internships,Self&Organizations		CR	1.0
Course Topic:		Self & Organizations			
Curr Credits		16.0 Grd Pts	59.100	GPA	3.940
Cuml Credits		74.0 Grd Pts	283.200	GPA	3.879
Honor:		Dean's List			

2023 Spring

School: College & Graduate Arts & Sci

Laura Hawthorne
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Date Printed **01/01/2024**

COURSE NUMBER	COURSE TITLE	GRADE	CREDITS
Major:	Applied Statistics		
Concentration:	Data Science		
Major:	Computer Science		
CS 3140	Software Dev Essentials	A	3.0
CS 4774	Machine Learning	A+	3.0
SARC 5400	Data Visualization	A-	3.0
STAT 4120	Applied Linear Models	A	3.0
STAT 5170	Applied Time Series	A	3.0
Curr Credits	15.0 Grd Pts 59.100	GPA	3.940
Cuml Credits	89.0 Grd Pts 342.300	GPA	3.890
Honor:	Dean's List		

2023 Fall

School:	College & Graduate Arts & Sci		
Major:	Applied Statistics		
Concentration:	Data Science		
Major:	Computer Science		
CS 2130	Computer Systems and Org 1	A-	4.0
CS 3240	Advanced Software Development	A	3.0
CS 4993	Independent Study	A+	3.0
STAT 4630	Statistical Machine Learning	A+	3.0
STAT 4996	Capstone	A	3.0
Curr Credits	16.0 Grd Pts 62.800	GPA	3.925
Cuml Credits	105.0 Grd Pts 405.100	GPA	3.895

End of Undergraduate Record

Laura Hawthorne
UNIVERSITY REGISTRAR