Yuqing Wang

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Current Position

Postdoctoral Scholar — **Palo Alto, CA**
Stanford University - Biomedical Informatics — *10/2023 - present*
Advisor: Tina Hernandez-Boussard

Education

University of California, Santa Barbara — **Santa Barbara, CA**
Ph.D. in Computer Science — *10/2020 - 9/2023*
Advisor: Linda Petzold
Disseration: AI and Big Data in Health: Boosting Reliability and Efficiency in Predictive Healthcare Models

University of Minnesota, Twin Cities — **Minneapolis, MN**
B.S. in Mathematics (*Distinction*) — *9/2016 - 5/2020*
Advisor: Kaitlin Hill
Coursework: Real Analysis, Abstract Algebra, Linear Programming, Nonlinear Optimization, Numerical Analysis, Matrix Theory, Ordinary Differential Equations, Probability Theory, Graph Theory, Machine Learning

Research Interests

- **Trustworthiness in Machine Learning:** Enhancing the reliability and adaptability of language models (LMs) in critical sectors, particularly in high-risk domains like healthcare, where inaccuracies can profoundly affect patient well-being.
- **Precision in Clinical Predictions:** Concentrating on refining the precision of LMs in clinical outcomes and policy recommendations to ensure both ethical and impactful patient care.
- **Efficiency in Diverse Applications:** Emphasizing the reliability and efficiency of LMs across multiple domains, ensuring timely, resource-efficient, and precise predictions.
- **Model Understanding and Integration:** Advancing human comprehension of LMs to enhance user trust and facilitate the seamless incorporation of artificial intelligence into decision-making workflows.

Selected Publications

1. **Yuqing Wang** and Yun Zhao. "TRAM: Benchmarking Temporal Reasoning for Large Language Models", in submission.
2. **Yuqing Wang** and Yun Zhao. "Metacognitive Prompting Improves Understanding in Large Language Models", in submission.
3. **Yuqing Wang**, Yun Zhao, and Linda Petzold. "An Empirical Study on the Robustness of the Segment Anything Model (SAM)", in submission.
4. **Yuqing Wang**, Prashanth Vijayaraghavan, and Ehsan Degan. "PROMINET: Prototype-based Multi-View Network for Interpretable Email Response Prediction", in EMNLP Industry Track 2023, Singapore, Dec. 2023.
5. **Yuqing Wang**, Yun Zhao, and Linda Petzold. "Are Large Language Models Ready for Healthcare? A Comparative Study on Clinical Language Understanding", in MLHC 2023, New York, USA, Aug. 2023.
6. **Yuqing Wang**, Yun Zhao, and Linda Petzold. "Predicting the need for blood transfusion in intensive care units with reinforcement learning", in ACM-BCB 2022, Chicago, USA, Aug. 2022. (Recipient of

the **Best Student Paper Award**)
7. **Yuqing Wang**, Yun Zhao, and Linda Petzold. "Enhancing Transformer Efficiency for Multivariate Time Series Classification", in ICDM 2022, New York, USA, Jul. 2022. (Recipient of the **Best Paper Award Nominee**)
8. **Yuqing Wang***, Yun Zhao*, and Linda Petzold. "Integrating Physiological Time Series and Clinical Notes with Transformer for Early Prediction of Sepsis", in ICDM 2022, New York, USA, Jul. 2022. (Recipient of the **Best Paper Award Nominee**)
9. **Yuqing Wang***, Yun Zhao*, Junfeng Liu, Haotian Xia, Zhenni Xu, Qinghang Hong, Zhiyang Zhou, and Linda Petzold. "Empirical Quantitative Analysis of COVID-19 Forecasting Models", in DMBIH 2021, Auckland, New Zealand, Dec. 2021. (Recipient of the **Best Paper Award**)
10. **Yuqing Wang***, Yun Zhao*, Rachael Callcut, and Linda Petzold. "Empirical Analysis of Machine Learning Configurations for Prediction of Multiple Organ Failure in Trauma Patients", in ICDM 2021, New York, USA, Jul. 2021.
11. Yun Zhao, Qinghang Hong, Xinlu Zhang, Yu Deng, **Yuqing Wang**, and Linda Petzold. "BERTSurv: BERT-Based Survival Models for Predicting Outcomes of Trauma Patients", in ICDM 2021, New York, USA, Jul. 2021.

Research Experience

Graduate Research Assistant **Santa Barbara, CA**
University of California, Santa Barbara *10/2020 - 6/2023*

- Member of Computational Science and Engineering Research Group, an interdisciplinary collaboration between computer scientists, statisticians, and health professionals, focusing on mathematical modeling and machine learning applications in biology and medicine.
- Apply machine learning (ML) and data mining techniques and algorithms to solve real-world problems related to healthcare and clinical informatics such as predictive diagnosis and intervention policy recommendations.

Undergraduate Research Assistant **Minneapolis, MN**
University of Minnesota, Twin Cities *1/2017- 12/2019*

- The effect of climate change on the resilience of global food trade network: Generated a scale-free network, compared it to a real network, and studied its resilience by simulating hurricanes, analyzing graph characteristics, and comparing degree distributions.
- Interrelationship between Native American students' interest in engineering and personality: Investigated the factors impacting the representation of Native Americans in engineering faculty positions such as financial barriers, academic barriers, and lack of family support.

Working Experience

Postdoctoral Scholar **Palo Alto, CA**
Stanford University *10/2023 - Present*

- Designed predictive models and prompts to enhance decision-making within Electronic Health Records (EHRs), with a focus on multimodal learning and policy learning.

Research Intern **San Jose, CA**
IBM Research - Almaden *6/2022 - 9/2022*

- Developed a prototype-based multi-view multi-branch network for interpretable email response prediction. It offered explanations at the document/sentence/phrase levels.
- Performed experiments on two real-world email datasets and performance of the proposed model improved over the strongest baselines *w.r.t.* weighted average F1 score by 3.50% and 3.62% on the Enron corpus and IBM-SalesLoft corpus, respectively.
- Edited email contents based on prototypes over keywords / key phrases improved the overall email

response ratio on the testing set by up to 1.9% and 3.8% on the Enron corpus and IBM-SalesLoft corpus, respectively.

Data Analyst Intern **Minneapolis, MN**
Mid-America Business Systems *5/2018 - 12/2019*

- Processed data based on business requirements and provided documentation.
- Developed SQL scripts, indexes, complex queries for data analysis and extraction.
- Performed triage, root cause analysis, and corrections to data issues reported by customers.

Business Analyst Intern **Minneapolis, MN**
Frontier Marketing *5/2017 - 8/2017*

- Created visually impactful dashboards in Excel and Tableau for daily data reporting by using pivot tables and VLOOKUP.
- Built forecasting models and ad-hoc queries to support business analysis, financial planning and financial controls.

Teaching Experience

- UCSB CS 8 Introduction to Computer Science Summer 2021
- UCSB ENGR 3 Introduction to Programming Spring 2021
- UCSB CS 111 Introduction to Computational Science Fall 2020
- UMN MATH 1151 Precalculus II Spring 2019
- UMN MATH 1051 Precalculus I Fall 2018

Honors & Awards

- Travel Award, Machine Learning for Healthcare Conference 2023
- Best Student Paper Award, 13th ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics 2022
- Best Paper Award, 9th Workshop on Data Mining in Biomedical Informatics and Healthcare 2021
- Academic Excellence Fellowship, UCSB *2020*
- Undergraduate Research Scholarship, UMN *2018*
- Maroon Global Excellence Scholarship, UMN *2016 - 2020*

Technical Skills

- **Computer Languages**: Python, R, MATLAB, Java
- **Databases**: MySQL, Microsoft SQL
- **Deep Learning Frameworks**: Pytorch, Tensorflow

Selected Talks and Presentations

- "Towards AI-Assisted Healthcare", in Stanford University, Virtual, Feb. 2023.
- "Towards AI-Assisted Healthcare", in Lawrence Livermore National Laboratory, Virtual, Jan. 2023.
- "The effect of climate change on the resilience of global food trade network", in 40th Annual Pi Mu Epsilon Undergraduate Conference, Minnesota, USA, Apr. 2019.
- "Interrelationship between Native American students' interest in engineering and personality", in Summer Undergraduate Research Symposium, Minnesota, USA, Aug. 2018.

Involvement

- Women in Science and Engineering Member, UCSB *10/2020 - 9/2023*
- Computer Science Graduate Representative (only Female member), UCSB *10/2020 - 10/2021*
- Society of Asian Scientists and Engineers Member, UMN *9/2017 - 5/2020*
- Women in Science and Engineering Initiative Member, UMN *9/2016 - 5/2020*
- First-Year Leadership Institute, UMN *9/2016 - 5/2017*

Volunteer and Community Service

- Teaching assistant at Girls Who Code @ UMN *9/2017 - 1/2019*
- Volunteering at Feed My Starving Children @ Minnesota *5/2017 - 5/2019*

Professional Service

- Conference Reviewer: ICLR (MLGH), NeurIPS (WiML, AI4D3), ACM-BCB
- Journal Reviewer: Patterns

References

- **Linda Petzold**, Distinguished professor, Department of Computer Science, UC Santa Barbara
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- **John R. Gilbert**, Professor Emeritus, Department of Computer Science, UC Santa Barbara
  Contact: gilbert@cs.ucsb.edu
- **Michael Beyeler**, Assistant Professor, Department of Computer Science, UC Santa Barbara
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- **Ehsan Degan**, Research Manager, IBM Research - Almaden
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- **Prashanth Vijayaraghavan**, Research Staff Member, IBM Research - Almaden
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