Eric Xing

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EDUCATION

Washington University in St. Louis   St. Louis, MO
Ph.D. in Computer Science; GPA: 4.00   *Aug 2023 − Present*

Western Kentucky University   Bowling Green, KY
B.S. in Computer Science with Minor in Mathematics, Summa Cum Laude; GPA: 4.00   *May 2019 − Aug 2023*

PUBLICATIONS

[1] **Xing, E.**, Venkatraman, S., Le, T., & Lee, D. ALISON*: Fast Stylometric Authorship Obfuscation.* The 38th Annual AAAI Conference on Artificial Intelligence (**AAAI'24**)
https://doi.org/10.1609/aaai.v38i17.29901

[2] **Xing, E.**, Liu, L., Xing, X., Qu, Y., Jacobs, N., & Liang, G. *Neural Network Decision-Making Criteria Consistency Analysis via Inputs Sensitivity.* 2022 International Conference on Pattern Recognition (**ICPR'22**), pp. 2328-2334.
https://doi.org/10.1109/ICPR56361.2022.9956394

[3] Khanal, S., **Xing, E.**, Dhakal, A., Sastry, S., Xiong, Z., Ahmad, A., & Jacobs, N. *PSM: Learning Probabilistic Embeddings for Multi-scale Zero-shot Soundscape Mapping.* Under Review.

[4] **Xing, E.** & Haleem, K. *Motorcycle Safety Investigation in Kentucky Using Machine and Deep Learning Techniques.* 2022 ASCE International Conference on Transportation and Development, pp. 68 - 80.
https://doi.org/10.1061/9780784484319.007

[5] **Xing, E.** & Xing, G. *A Toolkit for Assessments in Introductory Programming Courses.* Proceedings of the 54th ACM Technical Symposium on Computer Science Education (SIGCSE'23), p. 1285.
https://doi.org/10.1145/3545947.3576231

[6] Qu, Y., Yan, D., **Xing, E.**, Zheng, F., Zhang, J., Liu, L., & Liang, G. *Beware the Black-Box of Medical Image Generation: an Uncertainty Analysis by the Learned Feature Space.* 2022 International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC'22), pp. 3849 - 3853.
https://doi.org/10.1109/EMBC48229.2022.9871921

PROJECTS

Improving Text-Guided Image Retrieval   St. Louis, MO
Ph.D. Student at Washington University in St. Louis   *Jan 2024 − Present*

- Proposed novel composed image retrieval framework involving attention regulation over multi-level text modifier noun phrases to enforce robust natural language control for image retrieval.
- Conducted embedding and retrieval performance analysis of off-the-shelf image models over hotel room imagery.

ALISON: Fast Stylometric Authorship Obfuscation   College Park, PA (Remote)
Student Researcher: NSF REU in Machine Learning + Security   *May 2022 − Aug 2023*

- Proposed the novel authorship obfuscation system ALISON based on greedy replacement of important part-of-speech sequences
- Demonstrated that ALISON achieves 15% greater attack success while maintaining a higher degree of semantic preservation between original and obfuscated texts, all while reducing runtime by $> 10\times$
- Performed label entropy, parameter, and interpretability analyses on ALISON

Consistency Analysis of Neural Network Decision-Making Criteria   Bowling Green, KY
Student Researcher   *Aug 2021 − May 2022*

- Analyzed the inconsistency of neural network decision-making criteria
- Managed extensive training over numerous CNN and ViT architectures under different training strategies
- Determined factors correlated with increased model inconsistency after analysis of model interpretability
- Developed ensemble-based training algorithms for the generation of an initial model seed that decreases decision-criteria inconsistency by up to 80%, while retaining high model performance

Machine Learning Investigation of Kentucky Motorcycle Safety Bowling Green, KY
Student Researcher *Jul 2021 – May 2022*
- Applied machine learning techniques to the Kentucky State Police motorcycle crash data.
- Analyzed factors contributing to the determination of motorcycle crash injury severity.
- Developed a high-performance deep learning framework surpassing previous standards for motorcycle crash severity forecasting.

AWARDS

Computing Research Association Outstanding Undergraduate Researcher – Honorable Mention

ACTIVITIES & SERVICE

Kelly Autism Program
Tutor – Math and Computer Science, 2021 – 2022
- Tutored university students with autism spectrum disorders in math and computer science twice weekly
- Provided over 100 hours of service, helping multiple students across a wide range of computer science and math courses

Western Kentucky University ACM Student Chapter
President, 2023; Secretary 2022
- Led biweekly artificial intelligence seminars to provide chapter members with the background and resources to apply common machine learning techniques
- Coordinated department outreach initiatives for the recruitment of underrepresented groups in computer science
- Led International Collegiate Programming Contest (ICPC) practice sessions

SKILLS

Languages: Python, Java, C/C++, JavaScript, SQL, HTML/CSS, MATLAB

Technologies: Git, SVN, Docker, AWS

Libraries: PyTorch, PyTorch Lightning, HuggingFace, TensorFlow, NumPy, Pandas, Scikit-Learn, NLTK, Captum, Matplotlib

ADDITIONAL

Major Coursework: Computer Vision, Machine Learning, Advanced Algorithms, Automata Theory and Compilers, Computer Systems Architecture, Data Structures and Algorithm Analysis, Operating Systems, Software Engineering

Other Coursework: Numerical Analysis, Multivariable Calculus, Discrete Mathematics, Linear Algebra

GRE: 336 *(170 Quantitative, 166 Verbal)*, **5.5** Analytical Writing

US Citizen