Markelle Roesti

Machine Learning Research Scientist

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Work Experience

Applied Research Intern: Responsible AI
06/2024 – 09/2024

eBay • San Jose, CA

- Performed a systematic investigation of bias in LLM behavior in the context of e-commerce, uncovering high-impact, previously-unidentified gender bias issues in multiple models, including GPT-3.5
- Engineered a dataset of targeted counterfactual pairs to detect and characterize these issues

Data-Centric Machine Learning Intern
07/2023 – 10/2023

Apple • Heidelberg, Germany

- Formulated metrics and techniques for the automatic detection of hallucinations in LLM generations
- Developed an interactive tool for the data-driven exploration of such hallucinations and other rare, undesirable LLM behaviors, designed to address the needs of two product teams at Apple

Graduate Student Researcher
08/2020 – Present

University of California, Irvine • Irvine, CA

- Revealed new insights about human-AI interaction and delegation by running human-subjects experiments and developing modeling frameworks, in collaboration with cognitive scientists
- Created methodology for more holistic evaluation of machine learning models, including for capturing fairness issues in model calibration and for assessing LLMs' abilities to interpret linguistic uncertainty

Software Engineer Intern
03/2018 – 06/2020

Project Jupyter • San Luis Obispo, CA

- Implemented new, now widely-used features for an interactive computing environment (JupyterLab), following software development best practices such as automated testing and code review
- Collaborated with the UI/UX team throughout the design process to ensure usability and accessibility

Education

M.S. & Ph.D. in Computer Science
09/2020 – 06/2025 (expected)

University of California, Irvine • 4.0 GPA

B.S. in Statistics, Minor in Data Science
09/2016 – 06/2020

California Polytechnic State University, San Luis Obispo • 4.0 GPA

Skills and Technologies

ML Model Development • Evaluation & Benchmarking • Data Science • Visualization • Statistical Analysis

Software Engineering • Experimental Design • Scientific Writing • Interdisciplinary Collaboration

Python (PyTorch, Tensorflow, pandas, matplotlib, scikit-learn, etc.) • R • Java • SQL • Hadoop • Spark

Docker • git • slurm • AWS • GCP • HTML • CSS • JavaScript • TypeScript • React

Publications

"Understanding Systematic Miscalibration in Machine Learning Classifiers"
Markelle Kelly & Padhraic Smyth — *TREX — IEEE VIS 2022*

"Variable-based Calibration in Machine Learning Classifiers"
Markelle Kelly & Padhraic Smyth — *AAAI 2023*

"Capturing Humans' Mental Models of AI: An Item Response Theory Approach"
Markelle Kelly, Aakriti Kumar, Mark Steyvers, & Padhraic Smyth — *FAccT 2023*

"Perceptions of Linguistic Uncertainty by Language Models and Humans"
Catarina Belem*, **Markelle Kelly*,** Sameer Singh, & Padhraic Smyth — *EMNLP 2024*

"Benchmark Data Repositories for Better Benchmarking"
Rachel Longjohn*, **Markelle Kelly*,** Sameer Singh, & Padhraic Smyth — *NeurIPS 2024*

"Understanding Gender Bias in AI-Generated Product Descriptions"
Markelle Kelly, Mohammad Tahaei, Padhraic Smyth, & Lauren Wilcox — *accepted to FAccT 2025*

"Bayesian Consensus Prediction for Correlated Human Experts and Classifiers"
Markelle Kelly, Alex Boyd, Sam Showalter, Mark Steyvers, & Padhraic Smyth — *accepted to ICML 2025*

Teaching and Academic Activities

Workshop Organizer
"The Future of Machine Learning Data Practices and Repositories" at ICLR (2025)

Curator and Librarian
UCI Machine Learning Repository (2020-2025)

Teaching Assistant
Probabilistic Learning (2025), Project in AI (2022), Calculus III & IV (2017-2018)

Reviewer
Cognitive Research: Principles and Applications (2024), NeurIPS Datasets and Benchmarks (2022)

Fellowships and Awards

HPI Research Center Fellowship — *07/2022*

Irvine Initiative in AI, Law, and Society Fellowship — *01/2022*

Steckler Center for Responsible, Ethical, and Accessible Technology Fellowship — *06/2021*

UCI Computer Science Dean's Award — *09/2020*

Cal Poly Class of 2020 Academic Excellence Award (1 of 2 awarded) — *06/2020*

Best Visualization at UCLA DataFest — *04/2019*

* denotes joint first author