Andrey Risukhin

risuka@cs.washington.edu

EDUCATION

University of Washington, Seattle, WA

- M.S. Computer Science 2023 - 2025
- B.S. Computer Science with Data Science 2019 - 2023

ACADEMIC RESEARCH EXPERIENCE

Detecting Inconsistency, Robustness and Sensitivity of Language Models *is summer gap relevant*? Jan 2024 – Present

Postdoc Mentor: Dr. Hila Gonen, **Faculty Advisor:** Dr. Noah Smith

Goal: Develop metrics to detect whether prompted generated text is consistent or not (inconsistency such as sycophancy).

- Spearheaded llama3 robustness and sensitivity investigation across 4 datasets and 3 sources of inconsistency
- Applied systematic perturbations to augment human and GPT-generated similar text, creating ground truth evaluation
- Evaluated metrics, both lexical (ROUGE, ..) and embedding (TSNE, PCA clustering) for correlation with true consistency
- Finetuned dataset-specific llama3 consistency classifiers to outperform those metrics at detecting inconsistency

ColorGrid: A Multi-Agent Non-Stationary Environment for Goal Inference and Assistance Mar 2024 – Jun 2024

Independent Project, **Faculty Advisor:** Dr. Natasha Jacques

Goal: Approach natural human-machine collaboration by developing a Multi-Agent Reinforcement Learning (MARL) environment with hidden and changing rewards, and using it to assess State-of-the-Art (SOTA) algorithm performance

- Spearheaded environment design to naturally extend the "collaborative but fixed goal MARL" paradigm to a novel "leader-follower fluid goal MARL" setting
- Led three other members in implementing our environment and proximal policy optimization (PPO), adapting to the OpenAI Gymnasium framework
- Performed majority of training and evaluation runs, varying the reward distributions and goal switch probabilities
- Submitted first-author paper to AAAI 2025 (passed review and rebuttal, currently awaiting final acceptance)

Toward Automating Fine-Grained Human Annotation Jun 2023 – Dec 2023

PhD Student Mentor: Yushi Hu, **Faculty Advisor:** Dr. Noah Smith

Goal: Expand access to high-quality human annotations by building a high-quality annotation generator, trained on human annotations using Supervised Finetuning (SFT) and then Reinforcement Learning (RL).

- Spearheaded comparison of SFT and RL methods for generating text across 5 datasets and 8 policy metrics
- Extracted attention masks of SFT, allowing for reward modeling using TRL and FineGrainedRLHF codebases
- <conclusion here>

Evaluating Efficiency and Performance of Attention Implementations Sep 2022 – Jun 2023

Postdoc Mentor: Dr. Hao Peng, **Faculty Advisor:** Dr. Noah Smith

Goal: Investigate the tradeoffs of transformer accuracy to computation cost across different attention mechanism implementations, including composed templates, weighted singular value decomposition (SVD) and synthesized attention.

- Spearheaded project agenda, evaluated on Wikitext-103 generation (developed script to subsample complete articles)
- Extended the Fairseq repository by implementing multiheaded synthesized, template, and SVD attention (200M parameters), using einsum for interpretable implementation
- <Conclusion here>

Computer Vision for Physiological Signal Detection Dec 2021 – Jun 2022

PhD Student Mentor: Xin Liu, **Postdoc Advisor:** Dr. Soumyadip Sengupta

Goal: Enable telehealth with quantitative data by detecting respiration and heart rate via non-invasive smartphone cameras.

- Augmented subject videos (OpenCV), achieving 8.6x lower Mean Average Error on pulse and respiration MTTS-CAN
- Applied linear, nonlinear lighting augmentation to UBFC dataset, ran 50 experiments boosting cross-tone prediction
- Augmented subject videos to achieve lower Mean Average Error on pulse and respiration MTTS-CAN predictions
- Wrote Python code to apply linear and nonlinear lighting augmentation to UBFC dataset, ran ~50 experiments
- Achieved 8.6x lower MAE on subjects with skin tones underrepresented in the data using gamma correction

INDUSTRY RESEARCH EXPERIENCE

Automatically Tuning LLM System Prompts Jun 2024 – Sep 2024

Contextual AI (RAG Startup) Mentor: Dr. Casey Fitzpatrick

Goal: Automate human prompt tuning to accelerate the customization of a multiple large language model (LLM) retrieval augmented generation (RAG) system per customer.

- Spearheaded automatic prompt tuning system design
- Evaluated existing frameworks for using LLMs to tune system prompts (DSPy, SAMMO, TextGrad)
- Extended prompt rephrasing techniques (COPRO, MIPRO) to directly leverage context, added LLM reasoning and equivalence feedback, with recursive prompt edits
- Generated synthetic prompt-improvement pairs, developed pipeline for training a per-dataset model to optimize prompts

Personalizing Speech Feedback Through Context Extraction Feb 2023 – Mar 2023

Yoodli (AI Speech Coaching Startup) Mentor: David Lanman

Goal: Improve the quality of speech feedback generated for a user by determining the category of speech (such as interview preparation,).

- Used OpenAI APIs to run 3 speech context extraction experiments, further personalizing AI-generated coach feedback
- Presented analysis of 1000 most recent speeches, supporting deployment of context extraction to production service

Detecting and Assessing the Health of Roadside Utility Poles Jun 2022 – Aug 2022

Avanade Mentor: Dr. Michael Vogt

Goal: Reduce time for manual evaluation of roadside utility pole health via computer vision from mounted smartphone.

- Collected, annotated images of roadside utility poles. Augmented (including cropping, rotation) for robustness
- Trained 10x faster utility pole care models (Azure Cognitive Services) to classify components by health
- Raised 50% baseline accuracy to 70%, using data augmentation and balanced classes

TEACHING EXPERIENCE

Paul G. Allen School of Computer Science (3x) Winter ‘23, Winter ‘24, Winter ‘25

Teaching Assistant, Venture Scale Entrepreneurship

- Facilitated 80 students pitching ideas, forming 8-10 teams, presenting extended pitches biweekly
- Reduced communication friction by instituting an official course Slack, google calendar office hour scheduling, which increased office hour attendance and inter-team feedback
- Held biweekly open-ended 1:1 office hours with ~30 students, asking questions to guide refinement of their venture ideas
- Implemented quantitative, objective measurements of team participation such as peer evaluation, leading to qualitatively improved team dynamics and increased grades

Paul G. Allen School of Computer Science (3x) Autumn ‘21, Spring ‘24, Autumn ‘24

Teaching Assistant, Foundations of Computing I

- Held office hours ranging from 1:1 to ~20 students, helping students understand course concepts by synthesizing them with concepts from a student’s prior coursework
- Designed and presented weekly lessons, problems that built intuition of circuits, grammars, and formal proofs
- Taught two 50-minute sections weekly, with increasing attendance throughout the quarter (anecdotally, by peer recommendation)
- Proctored exams, graded homeworks and exams for 200-300 students

Paul G. Allen School of Computer Science Spring ‘21

Teaching Assistant, Machine Learning

- Created, presented weekly lessons for CSE 416 Introduction to Machine Learning, provided TAs with lessons
- Taught 20+ students machine learning with PyTorch, Pandas and Scikit-Learn for data and deep learning
- Introduced students to graphical inference, networks, and singular value decomposition applications
- Developed coding worksheets to teach neural networks, regularization, performance metrics, and model equity

Prime Factor Math Circle Dec 2020 – Jan 2021

Compute Science Teacher

- Prepared programming assignment problems for Honors Python 1 (grades 8-9) using Replit, Turtle graphics
- Helped students in 1:1 sessions when they needed extra assistance

PUBLICATIONS

[ColorGrid, AAAI in review**]**

TALKS

Networks & Choice Ranking | Statistics & Probability Association Mar 2021 - Jun 2021

- Implemented graph ranking models: MultiLogit, PageRank, SpringRank to infer faculty hiring across institutions
- Studied, presented utility and choice-making models for networks through 1:1 PhD student-directed reading

LEADERSHIP

Noah's ARK Natural Language Processing Lab (UW) Sep 2022 – Present

Undergraduate Research Assistant, Meeting Czar 4x quarters

- Volunteered to organize weekly prePhD (BS and MS) lab meetings for four consecutive quarters
- Presented monthly at weekly lab meetings, leading discussion of contemporary methods relevant to NLP
- Coordinated guest speakers (paper authors, lab graduates in academia and industry)
- Organized lab resources (weekly schedule, links to HYAK compute cluster documentation)
- Initiated end of quarter dinner tradition for bonding labmates

WORK / VOLUNTEER EXPERIENCE

Stealth Startup Jun 2023 – Oct 2023

Machine Learning Lead

- Designed, implemented Python service sourcing 10M web data records, overcoming model training cold start problem
- Owned critical search and recommendation algorithm, from design, QA, training, and implementation into MVP
- Led data annotation from scoping (25M, 455k hr) to automation, reducing hours by 70% and creating launch dataset

CDL volunteering virtual, virtual, in person

RigMonkey Data Scientist | Founded Startup Feb 2021 – Dec 2021

- With 3 cofounders, analyzed market data and 40 user interviews to validate our business, fulfilling 200 tailored builds
- Owned automated PC build creation from data scraping and ingestion to generating best-on-market builds

HONORS AND AWARDS

.

COURSEWORK

.

Transcript? Or highlight relevant courses

Add academic service category, emergency reviewer

- COLM 2024 review
- Softconf

Add page number

CV: have very very clear headers and subheaders, most people are skimming this

Chronologically, if needs to be highlighted do not violate chronology, just make subheaders

Academic lab
Internships
Industry XP
Classwork

SPA DRP

LITERALLY EVERYTHING I HAVE EVER DONE EVEN IF NOT RELEVANT
Everything post highschool

Anna Burago PFMC

Add as much detail as necessary while being clear and concise

Ability to restructure class (more resources, better policies, TA is how I interact with students AND professors)
Show success as PhD student