SHANNON GALLAGHER

Machine Learning Research Scientist, Statistician, PhD

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WORK EXPERIENCE

Machine Learning Research Scientist
AI Division, Software Engineering Institute

📅 September 2022 – Present   📍 Pittsburgh, PA

- Instantiated, fine tuned, orchestrated, and assessed LLMs for high stakes applications
- Developed prototype experiment and UI for human assessment of LLM responses
- Authored reports and publications for DoD customers and IEEE conferences
- Headed Mayflower Project for Office of Director of National Intelligence to research the use of LLMs for National Security
- Coordinated and oversaw research for related projects including analyzing biases in LLMs and machine unlearning
- Explored adversarial attacks and defenses on and for LLMs
- Researched penultimate embeddings of computer vision foundation models with respect to data drift
- Explored, modeled, and visualized time series categorical data for customer

Large Language Models | PyTorch | HuggingFace | docker

Team Lead of AI Engineering Research Scientists
AI Division, Software Engineering Institute

📅 August 2023 – Present   📍 Pittsburgh, PA

- Managed and led six machine learning research scientists in AI Engineering
- Organized monthly internal seminar for AI division, "Timely Topics in AI" to discuss relevant topics
- Co-created and co-led biweekly seminar for AI Engineering Research Scientists to discuss academic journal articles and other relevant information

Data Scientist
CERT, Software Engineering Institute

📅 June 2021 – August 2022   📍 Pittsburgh, PA

- Led internal research project for deepfake detection using ML models
- Explored transformer ML models and data for code weakness identification

Post Doctoral Fellow
National Institute of Allergy and Infectious Diseases, NIH

📅 Aug 2019 – April 2021   📍 Rockville, MD

- Led analysis for retrospective study of effect of remdesivir on COVID-19 patients in the ACTT-1 Trial
- Developed an R package, accompanying website, and manuscript studying the effect of HIV status and detection time on the probability of infection of clusters of Tuberculosis outbreaks
- Implemented and maintained an R Shiny app to aid researchers in development of malaria vaccine
- Created lecture notes and material for continuing education purposes

PhD Student
Carnegie Mellon University

📅 June 2014 – Aug 2019   📍 Pittsburgh, PA

- Researched statistical relationships between compartment models and agent-based model

EDUCATION

PhD of Statistics, 2019
MS of Statistics, 2015
BS of Mathematical Sciences, 2014
Carnegie Mellon University

📅 2010 – 2019   📍 Pittsburgh, PA

ACHIEVEMENTS

Panelist at AI for Defense 2023
Discussed LLM with other experts including from Microsoft and AskSage

Nominee for Newcomer of 2022
Nominated for achievement award at Software Engineering Institute

2020 Commencement Speaker
Selected student speaker at the 2020 Conferral of Degrees.

SKILLS

R (Expert)
- Package creation, debugging & development
- See `EpiCompare`, `InfectionTrees`, and `spew`

PyTorch (Intermediate)
- Fine tuned, orchestrated, and extracted embeddings of foundational models, including Llama and CLIP
- Tested and analyzed results from LLM fine tuning with LoRA

Python, Docker, bash, qsub (Intermediate)
- High performance, reproducible, and distributed computing

C++, julia, MatLab (Proficient)
- Programming experience (≥ 1 major project)

SERVICE

Reviewer
Multiple academic journals

📅 2017-Present

President
Women in Statistics at CMU

📅 2018 – 2019   📍 Pittsburgh, PA

Co-organizer
Women in Data Science @CMU

📅 2018   📍 Pittsburgh, PA