KOYENA PAL

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EDUCATION

Northeastern University   2022 – 2027
Doctor of Philosophy, Computer Science
- GPA: 4.0/4.0
- Advisor: Dr. David Bau and Dr. Renée Miller
- Research Areas: Interpretable AI, NLP, Data Science

Brown University   2021 – 2022
Master of Science, Computer Science
- GPA: 4.0/4.0
- Thesis: Summarization and Generation of Discharge Summary Medical Reports
- Thesis Advisor: Dr. Carsten Eickhoff

Brown University   2017 – 2021
Bachelor of Science, Computer Science, Honors
- GPA: 3.8/4.0
- Thesis: The Effect of Multi-Document Summarizations on User SERP Experience
- Thesis Advisor: Dr. Carsten Eickhoff
- Concentration Advisor: Dr. Ugur Cetintemel

PEER-REVIEWED PUBLICATIONS

1. Koyena Pal, Aamod Khatiwada, Roee Shraga and Renée J. Miller (2024). UGEN: Benchmarking Table Union Search using Large Language Models. *VLDB 2024 Workshop: Tabular Data Analysis Workshop (TaDA)*. [Best Long Paper]

2. Koyena Pal, Jiuding Sun, Andrew Yuan, Byron C. Wallace, & David Bau (2023). Future Lens: Anticipating Subsequent Tokens from a Single Hidden State. *SIGNLL Conference on Computational Natural Language Learning (CoNLL)*.

3. C. Meyer, D. Adkins, K. Pal, R. Galici, A. Garcia-Agundez, and C. Eickhoff , "Neural text generation in regulatory medical writing," *Frontiers in Pharmacology*, vol. 14, 2023, doi: 10.3389/fphar.2023.1086913.

4. K. Pal, S. Adepu and J. Goh, "Effectiveness of Association Rules Mining for Invariants Generation in Cyber-Physical Systems," *2017 IEEE 18th International Symposium on High Assurance Systems Engineering (HASE)*, 2017, pp. 124-127, doi: 10.1109/HASE.2017.21.

PRE-PRINT PUBLICATIONS

1. Jaden Fiotto-Kaufman, Alexander R Loftus, Eric Todd, Jannik Brinkmann, Caden Juang, Koyena Pal, Can Rager, Aaron Mueller, Samuel Marks, Arnab Sen Sharma, Francesca Lucchetti, Michael Ripa, Adam Belfki, Nikhil Prakash, Sumeet Multani, Carla Brodley, Arjun Guha, Jonathan Bell, Byron Wallace, David Bau 2024. NNsight and NDIF: Democratizing Access to Foundation Model Internals.

2. Aaron Mueller, Jannik Brinkmann, Millicent Li, Samuel Marks, Koyena Pal, Nikhil Prakash, Can Rager, Aruna Sankaranarayanan, Arnab Sen Sharma, Jiuding Sun, Eric Todd, David Bau, Yonatan Belinkov. 2024. The Quest for the Right Mediator: A History, Survey, and Theoretical Grounding of Causal Interpretability.

3. Koyena Pal, David Bau, and Renée J. Miller. 2024. Model Lakes.

4. Koyena Pal, Seyed Ali Bahrainian, Laura Mercurio, and Carsten Eickhoff. 2023. Neural Summarization of Electronic Health Records.

RESEARCH EXPERIENCE

Northeastern University   Sept 2022 - Present
PhD Student Researcher   *Boston, MA*

· Interpretable AI + NLP: Explored ways to predict distant tokens of a Large Language Model (LLM) through single hidden token representations. (Published at CoNLL 2023)
· Database + AI: Explored ways to create harder benchmarks and simpler solutions for database problems using LLMs. (Accepted at TaDA @VLDB 2024)
· Database + AI: Creating a vision for future research on model lakes, as an extension to a popular concept in database known as data lakes, to better understand and organize AI models in model sharing platforms. (Initial draft on arXiv: Model Lakes)

Brown University   Sept 2019 - Sept 2022
Student Researcher   *Providence, RI*

· AI + Healthcare: Developed a patient-centric literature summarization mechanism by implementing NLP models on biomedical texts.
· AI + HCI: Conducted user study on the effect of multi-document summarizations on User Search Results Page (SERP) experience.

iTrust Centre at Singapore University of Technology and Design   April 2016 - Jan 2017
Research Intern   *Singapore*

· AI + Cyber Security: Proposed a novel method to detect cyber-attacks on a Cyber-Physical System.

INDUSTRY EXPERIENCE

Akamai Technologies   Jan 2022 - May 2022
Information Security Intern   *Cambridge, MA*

· Created text summarization and recommender systems for a threat-intelligence dashboard

Akamai Technologies   May 2020 - August 2020
Information Security Intern   *Cambridge, MA*

· Designed and deployed UI features to achieve consistent language interpretation in Technical Risk Illuminator, a tool built to support executive decisions.
· Conceptualized and modeled an NLP-based multiple-tag generator to identify key terms and types of incidents from cyber-incident reports.

Akamai Technologies   May 2019 - August 2019
Information Security Intern   *Cambridge, MA*

· Optimized the yearly audit process duration by building a systems register, which generates answers that business units require to show that they are PCI Compliant.
· Revamped the PCI Gap Analysis Template to streamline the process of products entering the PCI Compliance program for the first time.

Brown University   May 2018 - July 2018
Information Security Analyst Intern   *Providence, RI*

· Substantially improved copyright ticketing process automation through network expansion in support of internal IP address, MAC address, and public IP username identification.

TEACHING AND RESEARCH MENTORSHIP

Northeastern University   Sept 2022 - Dec 2022
Graduate TA   *Boston, MA*

· CSCI 7150: Deep Learning, with Dr. David Bau (Fall 2022)

Brown University   Dec 2018 - Dec 2020
Teaching Assistant (TA) and Head TA*   *Providence, RI*
· CSCI 1470* and 2470*: Deep Learning, with Dr. Daniel Ritchie (Fall 2020)
· CSCI 1010: Theory of Computation, with Dr. Lorenzo De Stefani (Fall 2019)
· CSCI 0220: Introduction to Discrete Structures and Probability, with Dr. Caroline J Klivans (Spring 2019)
· CSCI 0170: Computer Science – An Integrated Introduction, with Dr. Philip N. Klein (Fall 2018)

Inspirit AI   July 2020 - August 2020, Dec 2021
Instructor   *Online*
· Conducted online lectures and coding assignments covering concepts such as machine learning fundamentals, NLP, computer vision, and ethics in AI.
· Guided global group of students through AI projects such as Anti-Refugee Semantic Analysis.

INVITED TALKS

- "Opening AI's Black Box with Prof. David Bau, Koyena Pal, and Eric Todd of Northeastern University". The Cognitive Revolution Podcast, Boston, MA, April 2024.
- Mechanistic Interpretability Reading Seminar, Discord, Online, Jan 2024

SERVICE

Lead Student Organizer @ New England Mechanistic Interpretability Meetup	2024
Reviewer @ NeurIPS	2024
Reviewer @ CoNLL	2024
Comms Sub-Chair @ CHIL 2024	2023-Present
Mentor @ Brown University's Women Launch Pad	2022-Present
Booth Host @ SOURCE	2023
Reviewer @ JAMIA	2023
Reviewer @ Northeastern University's CS PhD Admissions Committee	2022
Mentor @ Brown University's Women in Computer Science	2018-2022

HONORS AND AWARDS

Northeastern Graduate Fellowship	2022-2027
Northeastern Startup Fund	2022
Brown CS Scholarship for Richard Tapia Conference	2021
Brown University Undergraduate Honors Award	2021
Brown Undergraduate Teaching Assistant-ship	2019
Top 3 Best Student Paper Award @ IEEE 18th HASE Conference	2017