David Oniani

Curriculum Vitae

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Education

2017 Aug – 2021 May **BA, Computer Science, Mathematics**, *Luther College*, Decorah, IA

Experience

2024 Jun – Now **Applied Scientist II**, *Amazon*, Arlington, VA
- Member of the Special Projects Group within Amazon Ads Science (Amazon Science)

2023 Apr – Now **Research Collaborator**, *HealthUnity*, Palo Alto, CA
- Advisors: Prof. Yanshan Wang, Prof. Ramesh Jain, and Dr. Jia Li

2023 Oct – 2024 May **Associate Director, PittNAIL Lab**, *University of Pittsburgh*, Pittsburgh, PA
- Principal Investigator: Prof. Yanshan Wang

2022 Feb – 2024 May **Machine Learning Research Scientist**, *University of Pittsburgh*, Pittsburgh, PA
- Principal Investigator: Prof. Yanshan Wang

2021 Jun – 2022 Jan **Research Engineer**, *DawnLight*, Palo Alto, CA
- Supervisors: Dr. Nathan Liu and Dr. Prakash S. R.

2021 Apr – 2021 May **Machine Learning Intern**, *DawnLight*, Palo Alto, CA
- Supervisor: Dr. Nathan Liu

2020 Feb – 2020 Sept **Research Intern**, *Mayo Clinic*, Rochester, MN
- Mentors: Prof. Feichen Shen and Prof. Yanshan Wang

2018 May – 2019 Sept **Undergraduate Researcher**, *Luther College*, Decorah, IA
- Research in programming languages and type theory with Prof. Alan K. Zaring (Fall 2019)
- Research in machine learning and persuasion with Prof. Richard K. Merritt (Summer 2019)
- Research in teaching and unit testing with Prof. Roman Yasinovskyy (Summer 2018)

Teaching

2022 Feb – Now **Guest Lecturer**, *University of Pittsburgh*, Pittsburgh, PA
- Guest lectures on applied statistics and programming languages (HI 2020, HI 2021)
- Guest lectures on NLP and its applications in healthcare (HI 2250, HI 2453)

2018 Aug – 2021 Jan **Teaching Assistant**, *Luther College*, Decorah, IA
- TA for CS260 – Computational Models (Fall 2020)
- TA for CS252 – Object-Oriented Programming With Java (Fall 2019)
- TA for CS150 – Introduction to Computer Science (Fall 2018)

Service

2023 **Invited Co-Author**, IMIA Yearbook 2023 — *Chapter on LLMs for EHRs*

2023 **Program Committee Member**, EBAIC 2023 — *IEEE ICHI 2023 Workshop*

2023 **Reviewer**, Journal of Healthcare Informatics Research

2022 Now **Educational Content Creator**, YouTube

2022 **Secondary Reviewer**, LREC 2022

2022 **Reviewer**, Artificial Intelligence in Medicine (AAIM)

2022 **Reviewer**, IEEE ICHI 2022

2022 **Reviewer**, Big Data

Publications

[1] **David Oniani** and Amjad Jbara. "Generative LLMs for Query-Product Relevance: Findings and Observations". In: *AMLC Workshop on Gen AI, Personalization Algorithms and Recommender Systems*. 2024.

[2] **David Oniani***, Jordan Hilsman*, Chengxi Zang, Junmei Wang, et al. "Emerging Opportunities of Using Large Language Models for Translation Between Drug Molecules and Indications". In: *Scientific Reports* (2024). URL: https://www.nature.com/articles/s41598-024-61124-0.

[3] Mahyar Abbasian, Elahe Khatibi, Iman Azimi, **David Oniani**, et al. "Foundation Metrics: Quantifying Effectiveness of Healthcare Conversations powered by Generative AI". In: *npj Digital Medicine* (2024). URL: https://www.nature.com/articles/s41746-024-01074-z.

[4] **David Oniani***, Xizhi Wu*, Shyam Visweswaran, Sumit Kapoor, et al. "Enhancing Large Language Models for Clinical Decision Support by Incorporating Clinical Practice Guidelines". In: *IEEE ICHI 2024 Workshop: Human-Centred XAI: Enhancing AI Acceptability for Healthcare*. 2024. URL: 10.1109/ICHI61247.2024.00111.

[5] Yanshan Wang, Xizhi Wu, Luke Carlson, and **David Oniani**. "Generative AI enhanced with NCCN clinical practice guidelines for clinical decision support: A case study on bone cancer". In: *2024 ASCO Annual Meeting*. 2024. DOI: 10.1200/JCO.2024.42.16_suppl.e13623.

[6] Sonish Sivarajkumar, Thomas Yu CHow Tam, Haneef Ahamed Mohammad, Samual Viggiano, **David Oniani**, Shyam Visweswaran, et al. "Extraction of Sleep Information from Clinical Notes of Alzheimer's Disease Patients Using Natural Language Processing". In: *JAMIA* (2024). DOI: 10.1093/jamia/ocae177.

[7] Daniel R. Harris, Sunyang Fu, Andrew Wen, Alexandria Corbeau, Darren Henderson, Jordan Hilsman, **David Oniani**, and Yanshan Wang. "The ENACT Network is Acting on Housing Instability and the Unhoused". In: *Journal of Clinical and Translational Science (JCTS)* (2024). DOI: 10.1017/cts.2024.543.

[8] Sonish Sivarajkumar, Haneef Ahamed Mohammad, **David Oniani**, Kirk Roberts, et al. "Clinical Information Retrieval: A scoping review". In: *Journal of Healthcare Informatics Research* (2024). DOI: 10.1007/s41666-024-00159-4.

[9] **David Oniani**, Jordan Hilsman, Yifan Peng, Ronald K. Poropatich, et al. "Adopting and expanding ethical principles for generative artificial intelligence from military to healthcare". In: *npj Digital Medicine* (2023). URL: https://www.nature.com/articles/s41746-023-00965-x.

[10] **David Oniani**, Premkumar Chandrasekar, Sonish Sivarajkumar, and Yanshan Wang. "Few-Shot Learning for Clinical Natural Language Processing Using Siamese Neural Networks: Algorithm Development and Validation Study". In: *JMIR AI* (2023). DOI: 10.2196/44293.

[11] **David Oniani**, Sreekanth Sreekumar, Renuk DeAlmeida, Dinuk DeAlmeida, et al. "Toward Improving Health Literacy in Patient Education Materials with Neural Machine Translation Models". In: *AMIA Jt Summits Transl Sci Proc*. PMID: 37350905. 2023.

[12] **David Oniani**, Bambang Parmanto, Andi Saptono, Allyn Bove, et al. "ReDWINE: A Clinical Datamart with Text Analytical Capabilities to Facilitate Rehabilitation Research". In: *International Journal of Medical Informatics* (2023). DOI: 10.1016/j.ijmedinf.2023.105144.

[13] Anusha Bompelli, Yanshan Wang, Ruyuan Wan, Esha Singh, Yuqi Zhou, Lin Xu, **David Oniani**, et al. "Social and Behavioral Determinants of Health in the Era of Artificial Intelligence with Electronic Health Records: A Scoping Review". In: *Health Data Science* (2021). DOI: 10.34133/2021/9759016.

[14] **David Oniani** and Yanshan Wang. "A Qualitative Evaluation of Language Models on Automatic Question-Answering for COVID-19". In: *Proceedings of the 11th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics (ACM-BCB)*. 2020. DOI: 10.1145/3388440.3412413.

[15] **David Oniani**, Guoqian Jiang, Hongfang Liu, and Feichen Shen. "Constructing co-occurrence network embeddings to assist association extraction for COVID-19 and other coronavirus infectious diseases". In: *Journal of the American Medical Informatics Association (JAMIA)* (2020). DOI: 10.1093/jamia/ocaa117.

[16] Roman Yasinovskyy, Karina Hoff, and **David Oniani**. "Setting Up Python Development Environment for Use in a Small Classroom". In: *Midwest Instruction and Computing Symposium*. 2020. URL: https://www.micsymposium.org/mics_2020_Proceedings/MICS2020_paper_61.pdf.

Manuscripts Under Review

[17] **David Oniani** and Yanshan Wang. *In-Context Learning Functions with Varying Number of Minima*. Under Review at IEEE Transactions on Neural Networks and Learning Systems. Preprint at https://arxiv.org/abs/2311.12538.

[18] **David Oniani**, Jordan Hilsman, Hang Dong, Fengyi Gao, et al. *Large Language Models Vote: Prompting for Rare Disease Identification*. Under Review. Preprint at https://arxiv.org/abs/2308.12890.

Manuscripts in Preparation

[19] Xizhi Wu*, **David Oniani***, Zejia Shao, Sonish Sivarajkumar, et al. *Artificial Intelligence for Precision Nutrition: A Literature Review*. In Preparation.

[20] Jordan Hilsman*, **David Oniani***, and Yanshan Wang. *Topic: ML System for Patient Recommendations*. In Preparation.

[21] Jordan Hilsman, Thomas Tam, Sonish Sivarajkumar, **David Oniani**, et al. *Topic: Custom LLM*. In Preparation.

Honors and Awards

2024 Inducted as a Full Member into Sigma Xi Scientific Research Honor Society
2023 Green Card Approval for Exceptional Ability (NIW), USCIS
2020 Inductee, Pi Mu Epsilon Honorary National Mathematics Society
2017 – 2020 Dean's List Recipient, Luther College
2018 – 2019 Recipient of Two Dean's Office Summer Research Awards, Luther College
2017 – 2021 Founders Scholarship, Luther College
2017 – 2021 Recipient of Multiple Highly Competitive Scholarships, Luther College
2016 Gold Medal for Academic Excellence, Ministry of Education and Science of Georgia
2011 – 2016 Four-Time Finalist ($\approx$ TOP 20 – 30), National Mathematics Olympiad of Georgia
2014 7$^{\text{th}}$ Place (TOP 10), National Mathematics Olympiad of Georgia
2014 IMO Candidate for National Team, Ministry of Education and Science of Georgia
2014 IPhO Candidate for National Team, Ministry of Education and Science of Georgia
2014 Winner, Second Stage, National Mathematics Olympiad of Georgia

Technical Skills

Languages Python, Rust, Shell Script, C++, C, SQL, Lua, Haskell, R, JavaScript, LaTeX
Tools Linux, Neovim, Git, Docker, Flask, Zola, Google Cloud Platform (GCP)
Libraries PyTorch, Transformers, NumPy, Matplotlib, pandas, scikit-learn

Natural Languages

English Native Proficiency
Georgian Native Proficiency
Russian Native Proficiency
Mingrelian Native Proficiency *Mingrelian is a Kartvelian (Colchian) language of Western Georgia*

Professional Memberships

2022 – Now **Member**, Association for Computing Machinery (ACM)