Haoran Ding

Contact Information
775 W Walnut St, Indianapolis, 46202
Tel: (+1) 585-309-3306
Email: ding279@purdue.edu
LinkedIn
Google Scholar Page

EDUCATION

Doctor of Philosophy, Computer Engineering, GPA: 3.66/4.00 June 2024
Purdue University, Indianapolis, IN
Advisor: Xiao Luo, PhD
Dissertation Title: "Large Language Models for Unsupervised Keyphrase Extraction and Biomedical Data Analytics."

Master of Arts, Mathematics, GPA: 3.00/4.00
Binghamton University, Binghamton, NY May 2019

Bachelor of Science, Mathematics, GPA: 3.86/4.00
Nazareth University, Rochester, NY December 2015

Bachelor of Science, Economics, average score: 80.2/100
Shandong University of Finance and Economics, Jinan, Shandong, CHINA June 2013

RESEARCH EXPERIENCE

Purdue University Indianapolis August 2019 – June 2024
Research Assistant

- Address various Natural Language Processing (NLP) challenges, including extracting information from electronic health records. Design, develop, and deploy medical decision-making assistant systems and visible information retrieval systems.
- Employ classical artificial intelligence (AI) and machine learning (ML) techniques and biomedical risk assessment methods to model and analyze large-scale biomedical data effectively.
- Publish multiple top conference papers leveraging experience in NLP and biomedical data analytics. Focus on applying, evaluating, and continuously improving large language models (LLMs) and AI/ML techniques for information extraction.

PUBLICATIONS

- X. Luo, **H. Ding**, S. J. Warden, R. N. Moorthi, and E. A. Imel, "Integrate data-driven and knowledge-driven approaches to analyze clinical notes with structured data for sarcopenia detection," *Health Informatics Journal*, 2024 (Accepted).
- X. Luo, **H. Ding**, A. Broyles, S. J. Warden, R. N. Moorthi, and E. A. Imel, "Using machine learning to detect sarcopenia from electronic health records," *Digital Health*, vol. 9, 2023.
- **H. Ding** and X. Luo, "AGRank: Augmented Graph-based Unsupervised Keyphrase Extraction," in *Proceedings of the 2nd Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics and the 12th International Joint Conference on Natural Language Processing*, 2022.

- T. Jing, H. Xia, R. Tian, **H. Ding**, X. Luo, J. Domeyer, R. Sherony, and Z. Ding, "InAction: Interpretable action decision making for autonomous driving," in *Computer Vision–ECCV 2022: 17th European Conference*, Tel Aviv, Israel, October 2022, pp. 23–27.
- **H. Ding** and X. Luo, "AttentionRank: Unsupervised keyphrase extraction using self and cross attentions," in *Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2021.
- **H. Ding** and X. Luo, "Attention-based unsupervised keyphrase extraction and phrase graph for COVID-19 medical literature retrieval," *ACM Transactions on Computing for Healthcare*, vol. 3, no. 1, pp. 1–16, 2021.
- X. Luo, L. Ara, **H. Ding**, D. Rollins, R. Motaganahalli, and A. P. Sawchuk, "Computational methods to automate the initial interpretation of lower extremity arterial Doppler and duplex carotid ultrasound studies," *Journal of Vascular Surgery*, vol. 74, no. 3, pp. 988–996, 2021.
- X. Luo, **H. Ding**, M. Tang, P. Gandhi, Z. Zhang, and Z. He, "Attention mechanism with BERT for content annotation and categorization of pregnancy-related questions on a community Q&A site," in *Proceedings of the 2020 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2020, pp. 1077–1081.
- Y. Lu, X. Luo, Z. Zhang, **H. Ding**, and Z. He, "Retrieving lab test-related questions from social Q&A sites by combining shallow features and deep representations," in *Proceedings of the 2020 AMIA Annual Symposium*, 2020, pp. 783.

SOFTWARE, PROGRAMMING AND OTHER SKILLS

Python

- **AttentionRank**: Unsupervised keyphrase Extraction using Self and Cross Attentions
  Github link: https://github.com/hd10-iupui/AttentionRank

Programing Skills

- Development: Python, PyTorch, Hugging Face, R, AWS, GitHub, SQL, Power BI
- Technical Expertise: Natural Language Processing (NLP), Large Language Models (LLMs), Generative AI, Prompt Engineering, Information Retrieval, Information Extraction, Machine Learning, Deep Learning, Attention Models

Other Skills

- Professional Skills: Project Management, Software Engineering, Data Analysis, Problem Solving
- Interpersonal Skills: Teamwork, Cross-team Cooperation, Leadership
- Personal Attributes: Passion, Fast Learner

HONORS

Dean's List Scholarship - Nazareth University June 2015
Outstanding Scholarship - Shandong University of Finance and Economics 2012, 2013

RELEVANT COURSES

Purdue University Indianapolis
Data Structures and Algorithms
Artificial Intelligence

Database
Neural Networks
Pattern Recognition & Decision Making Process
Optimization Methods Systems
Digital Signal Processing

Binghamton University

Probability
Statistical Inference
Regression Analysis
Linear Algebra&Matrix Theory
Real Analysis