Nahid Zeinali

Department of Computer Science & Informatics, University of Iowa
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Data Scientist with 8+ years of hands-on experience and a solid foundation in software engineering and medical/health informatics. Specializing in AI techniques, with expertise in NLP, LLMs, and deep learning models. Proven ability to collaborate with multidisciplinary teams to develop healthcare systems and successfully work with cross-functional teams, driving data-driven innovations and delivering impactful research in clinical settings.

EDUCATION

Ph.D., Informatics**, University of Iowa, Iowa City, IA, USA* — ***May 2022- Expected Jan 2025
M.S, Informatics,** University of Iowa, Iowa City, IA, USA* — ***Aug 2021-May 2022
M.S, Medical Informatics,** Tarbiat Modares University, Tehran, Iran* — ***Aug 2013-May 2016
B.S, Computer Software Engineering,** Najafabad Azad University, Isfahan, Iran* — ***Aug 2005-Jan 2010

PROFESSIONAL EXPERIENCE

Research Assistant, Computer Science Department, University of Iowa — ***Aug 2021- Present***

- Analyzed EHRs using Python and statistical methods, improving medical research and patient care
- Identified predictors of symptom reporting agreement using deep learning and statistics
- Developed an embeddings-augmented NLP system with the research team
- Applied NLP and text analysis (sentiment analysis and named entity recognition) to clinical notes in EHRs
- Pre-trained and fine-tuned LLMs (BERT, GPT, Llama) to detect cancer symptoms and palliative care from clinical notes
- Used Open AI -API (GPT-4) to generate synthetic clinical notes, simulating real-world medical documentation
- Applied prompt learning to detect nausea, vomiting, and anxiety symptoms through Named Entity Recognition (NER)
- Contributed to developing the OASIS app for cancer patients, creating deep-learning algorithms for symptom prediction
- Extracted web content, built a sentiment classifier, and conducted cluster and topic analysis to identify critical themes
- Enhanced demand forecasting methodologies with Python-based tools and algorithms
- Developed an AI system for heart disease classification using traditional machine-learning models
- Authored two first-author manuscripts and co-authored 4 for peer-reviewed journals, plus 5+ abstracts and presentations (AMIA and IEEE) for international conferences
- Reviewed two manuscripts for The JMIR journal

NLP Data Scientist, National Cancer & Federick National Laboratory, NIH — ***Jun 2024-Aug 2024***

- Collaborated with NCATS team on the RARe-SOURCE™ project to build AI pipeline
- Developed an AI chatbot leveraging large language models (LLMs) to analyze literature on Farber disease and associated genes.

Software Engineer, Khorshid Hospital, Isfahan — ***Feb 2019 – July 2021***

- Collaborated with business teams to develop EMR (Electronic Medical Records), PIS, and LIS, improving workflows and patient care by 35%
- Developed an Android app to track heart failure symptoms for 3,000+ patients in rural Isfahan
- Autorthed one paper as co-author for peer-reviewed journals

Software Engineer, Parisian Institute, Tehran — ***Dec 2016 – Jan 2019***

- Designed and developed an EHR management dashboard to streamline access to EHR data, facilitating the creation of critical reports and reducing report turnaround time by 68%.
- Trained and mentored 1,500+ clinicians on EHR systems, driving organizational growth and success
- Authored two papers as the first author for peer-reviewed journals
- Focused on empowering mothers to use technology for communication, learning, and personal growth.

Teaching Assistant, Computer Science Department, University of Iowa — ***Aug 2024- Present***

- Led weekly in-person discussion sessions for 40+ students in Python Programming
- Offered one-on-one support to enhance understanding of informatics and Python
- Developed and graded assignments and projects
- Clarified course objectives and graded student work

TECHNICAL PROFICIENCIES

- ***Programming:*** Python, MATLAB, C/C++/C#, ASP.net, Android, JavaScript, HTML, XML
- ***ML Framework:*** Py Torch, TensorFlow, Pandas, NumPy, Scikit-learn, Keras, Matplotlib, Seaborn
- ***NLP & LLM Framework:*** NLTK, Spacy, BERT, GPT, Llama, Lang Chain, RAG (Retrieval Augmented Generation)

- ***Cloud Platforms:*** Google Cloud, High-Performance Computing (HPC), Frederick Research Computing Environment (FRCE), AWS
- ***Data Storage and Retrieval Systems:*** MS SQL Server, FAISS, CHROMA DB, ASTAR DB
- ***Statistics Tools:*** R, SPSS, SAS, STATA
- ***BI Tools:*** Power BI, Jupiter Notebook
- ***CICD:*** GitHub, Git, Doker
- ***Networking:*** TCP/IP, VLAN, Router & Switch Configuration
- ***Operating Systems & Tools:*** Windows, Linux, Azure, VMware, Active Directory, Server Clustering
- ***Health Area:*** AMIA 10x10 certification, Electronic Health Records (EHRs), Biomedical & Health Systems, Healthcare Standards

HONORS & AWARDS

- ***Ballard and Seashore Dissertation Fellowship*** ***Fall 2024***
- ***Student Impact Grant, University of Iowa*** ***Summer 2024***
- ***AMIA 10*10 program funded by Carver College of Medicine (CCOM), University of Iowa*** ***Spring 2024***
- ***Research and Travel GPSG Award, the University of Iowa*** ***Spring & Fall 2024***
- ***Research Assistant Grant, College of Nursing, University of Iowa*** ***Spring 2024***
- ***Publication Grant, University of Iowa*** ***Winter2024***
- ***Travel GSS Award, Graduate College, University of Iowa*** ***Spring & Fall 2024***
- ***Travel CS Award, Computer Science Department, University of Iowa*** ***Spring& Fall 2024***
- ***Recruitment Fellowship, IGPI (Per Year), University of Iowa*** ***2021- 2024***
- ***Recruitment Fellowship, Tarbiat Modares University*** ***2013 -2016***

COMMUNITY AND LEADERSHIP SERVICE

P2P Mentor & Mentee Volunteer, University of Iowa ***Fall 2024***
Student Volunteer, AMIA 2024 Annual Symposium, AMIA Organization ***Fall 2024***
Student Volunteer, ISO Organization, University of Iowa ***2021-2023***
Volunteer Member, Institute for the Intellectual Development of Children and Young Adults (IIDCYA) ***2012-2013***

PUBLICATION

- **N. Zeinali**, Stephanie Gilbertson-White, et al., "Machine Learning Approaches to Predict Symptoms in People with Cancer: A Systematic Review," *JMIR cancer,2024.*
- **N. Zeinali**, S. White, et al. *"*Symptom-BERT: Enhancing Cancer Symptom Detection in EHR Clinical Notes*." Journal of pain and symptom management (2024).*
- A. AlBashayreh, A. Bandyopadhyay, **N. Zeinali**, et al. "Natural Language Processing Accurately Differentiates Cancer Symptom Information in EHR Narratives." *JCO clinical cancer Informatics,2024.*
- S.G. White, A. AlBashayreh, A. Bandyopadhyay, **N. Zeinali,** et al., "Special Section on Patient-Reported Outcomes and Informatics: Predictors of Concordance Between Patient-Reported and Provider-Documented Symptoms in the Context of Cancer and Multimorbidity." *ACI,2024*
- A. Bandyopadhyay, A. AlBashayreh, **N. Zeinali,** et al. **"**Using real-world EHR data to predict the development of 12 cancer-related symptoms in multimorbidity. Predictive." *Open JAMIA (Journal of American Medical Informatics Association)*, 2024.
- Elham Nazari, **Nahid Zeinali**, et al. "Application of Big Data Analysis in Healthcare based on the six building blocks of health systems' Framework: A Survey." *Dokkyo Journal of Medical Sciences 2021.*
- **Nahid Zeinali,** Abbas Asosheh, et al. "Provide interoperability model to interact in hospital information systems." *Journal of Health and Biomedical Informatics, 2017*.
- **Nahid Zeinali**, Abbas Asosheh, et al. "The Conceptual Model to Solve the Problem of Interoperability in Health Information Systems." *2016 8th International Symposium on Telecommunications (IST).*
- Zeinab Delaram, **Nahid Zeinali,** et al. "The Common Applications of Social Networks in Healthcare." *Health Information Management 2016.*

PRESENTATION & POSTER

- **N. Zeinali (Presenter)**, A. AlBashayreh, et al. "Comparison of BERT Implementations for Enhanced Cancer Symptoms Extraction from Electronic Health Records." *2024 IEEE First International Conference on Artificial Intelligence for Medicine, Health, and Care (AIMHC), Laguna Hills, CA, USA, 2024, pp. 18-19, Doi: 10.1109/AIMHC59811.2024.00011*.
- **N.Zeinali (Presenter),** Stephanie Gilbertson-White, et al. "Advanced Detection of Nausea/Vomiting and Anxiety in Patients with Cancer." *AMIA 2024 Annual Symposium.*
- A. AlBashayreh, **N. Zeinali**, et al. " Leveraging Spiritual-BERT for Characterizing Spiritual Care Documentation in EHRs of Older Adults with Heart FailureLeveraging Spiritual-BERT for Characterizing Spiritual Care Documentation in EHRs of Older Adults with Heart Failure." *AMIA 2024 Annual Symposium.*
- A. AlBashayreh, **N. Zeinali**, et al. "Innovating the Detection of Care Priorities in Heart Failure Using Large Language Models." *Poster/GSA 2024*
- A. AlBashayreh, **N. Zeinali**, et al. "Disparities in Advance Directive Completion and life-sustaining Treatment Preferences in older adults." *Poster/ Annual Assembly Hospice and Palliative Care 2024*
- **N.Zeinali,** Stephanie Gilbertson-White, et al. "Leveraging Large Language Models for Named Entity Recognition of Anxiety and Nausea and Vomiting in Patients with Cancer." *AMIA Informatics 2025.*