Nahid Zeinali

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PROFESSIONAL SUMMARY (DATA SCIENTIST)

- Data Scientist with 8+ years of experience in healthcare system optimization
- Specialized in AI (Artificial Intelligence) techniques and data-driven approaches for clinical applications
- Expertise in NLP, LLMs (BERT, GPT, Llama), and deep learning models for clinical applications
- Collaborated with a multidisciplinary team to develop Healthcare systems and a management dashboard
- Trained and mentored 1,500+ clinicians on utilizing the EHR (Electronic Health Record) management dashboard
- Led discussions for 40+ students to develop strong Python coding skills
- Successfully collaborated with cross-functional teams from diverse cultures across industry, hospitals, academia, and NIH
- Published ten papers in peer-reviewed journals (4 as first author, 6 in collaboration)
- Attended high-profile conferences, including AMIA and IEEE, to present research posters
- Awarded multiple grants, including the Student Impact Grant ($1000), AMIA 10 *10 Program Grant ($2000), Research and Travel GPSG (Graduate & Professional Student Government) Award ($1250), Research Assistant Grant ($7000), Publication Grant ($2000), Travel GSS Award ($650), Travel CS Award ($450), Recruitment Fellowship ($20,500/yearly for three years), and NIH Internship Recruitment ($10,000).

TECHNICAL PROFICIENCIES

Programming & Frameworks: Python, MATLAB, C/C++/C#, ASP.net, Android, JavaScript, HTML, XML
ML Framework: Py Torch, TensorFlow, Pandas, NumPy, Scikit-learn, Keras, Matplotlib, Seaborn, NLTK
NLP & LLM (Large Language Models): 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

EDUCATION

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

PROFESSIONAL EXPERIENCE

Teacher 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

NLP Data Scientist, National Cancer & Federick National Laboratory, NIH — ***Summer Internship 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.

Research Assistant, Computer Science Department, University of Iowa — ***Aug 2024- 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 for international conferences
- Reviewed two manuscripts for The JMIR journal

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

PRESENTATIONS & POSTER CONFERENCE

- **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. "Evaluation of BERT Variants for identifying cancer symptoms from Clinical Notes." *Holden Comprehensive Cancer Center Scientific Retreat, Iowa, 2024.*
- **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 Failure.**"** *AMIA 2024 Annual Symposium*
- A. AlBashayreh, **N.Zeinali,** et al. **"**Innovating the Detection of Care Priorities in Heart Failure Using Large Language Models." *GSA 2024 Annual Scientific Meeting*

PUBLICATIONS

- **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.
- Nazari E, **Zeinali N**, et al. "Application of Big Data Analysis in Healthcare Based on 6 Building Blocks of Health Systems: Survey". *Dokkyo Journal of Medical Sciences (DJMS) 2020.*
- **N. Zeinali**, A. Asosheh, et al. "Provide Interoperability Model to Interact in Hospital Information Systems." *Journal of Health and Biomedical Informatics, 2017.*
- **N. Zeinali**, A. Asosheh, et al. "The Conceptual Model to Solve Problem of Interoperability in Health Information Systems." 2016 8th International Symposium on Telecommunications (IST), *2016, pp. 684-689, Doi: 10.1109/ISTEL.2016.7881909.*
- Shah Moradi M, **Zeinali N**, et al. "The Common Applications of Social Networks in Healthcare." *Journal of Health Information Management (2016): 243-248.*
- Shah Moradi M, **Zeinali N**, et al. "The Role of Social Networks in Healthcare: Applications and Limitations." *Journal of Health and Biomedical Informatics 2015; 2(2):124-128.*