

# MOHSEN NAYEBI KERDABADI

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## ABOUT ME

Final-year CS Ph.D. specializing in **Foundation Models, LLMs, and Graph ML** for text-attributed graphs, relational/tabular data, and temporal sequences. **5+ years of AI research experience** spanning LLM-GNN integration, knowledge-grounded LLMs and knowledge graph construction, adaptive retrieval and RL-based augmentation, LLM post-training, graph transformers, and spatio-temporal representation learning. First-author publications at **ACL, EMNLP, CIKM, and NeurIPS**, with industry AI research experience at **Capital One and SAP Labs**.

## TECHNICAL/RESEARCH EXPERTISE

**Graph & Relational Learning:** Graph Neural Networks; Graph Transformers; Text-Attributed Graphs; Knowledge Graphs; Temporal Graph Learning; Graph/Relational/Tabular Foundation Models

**LLMs & Adaptation:** Large Language Models, LLM Post-Training; Parameter-Efficient Fine-Tuning (PEFT/LoRA); Supervised Fine-Tuning (SFT); Soft Prompting & Prompt Tuning; Knowledge-Grounded LLMs

**Retrieval & Representation Learning:** Adaptive Retrieval; Knowledge Graph Retrieval & Augmentation; Reinforcement Learning; Sequential Modeling; Time Series Analysis; Transformers; Recommendation Systems

**ML Systems:** Python; PyTorch; Graph ML Frameworks; LLM & Retrieval Systems; Multi-Agent Workflows; Distributed ML & Hyperparameter Optimization; SQL & Cloud Data Platforms; Data Analysis

## EXPERIENCE

### SAP Labs – AI Research PhD Associate Intern – Palo Alto, CA

*Aug. 2026 - Dec. 2026*

- **Graph, Relational, and Tabular Foundation Models** for learning over multi-table and structured data.
- Developing parameter-efficient relational adaptation for pretrained tabular models.
- Relational in-context learning and graph-based retrieval for generalization across datasets/tasks.

### Capital One – Principal Data Science Intern, AI Foundations – New York, NY

*Jun 2026 - Aug. 2026*

- Researched Graph Foundation Models over consumer identity data and developed HERMES, a dual-scale relational Graph Transformer integrating heterogeneous temporal neighborhoods with ecosystem-level context.
- Evaluated on 130M+ transactions, achieving +6% boost on AUC, 45% lower flag rate, and 25% higher recall.

### Capital One – Principal Data Science Intern, AI Foundations – San Jose, CA

*Jun 2025 - Aug. 2025*

- Reframed real-time fraud detection as temporal graph node classification; built a directed temporal graph (100M+ nodes/1B edges) linking online sessions with time/recency constraints, enabling causal message passing.
- Designed temporal GNN models with inductive neighborhood sampling and lag-aware supervision. applied GN-Explainer graph interpretable study (Improved AUC by 6.38% while reducing customer friction by >50%.| [paper](#))

### University of Kansas – Research Assistant

*Jan. 2023 - Present*

- **LLM Refinement over RL-Budgeted Relational Graphs for Personalized Concept Representation**
  - \* Developed a personalized LLM-GNN co-learning framework using sequential reinforcement learning for budget-aware KG retrieval, heterogeneous graph message passing, and graph-aware soft prompting for context-dependent representation learning.
- **MedCo: Text-Attributed Knowledge Graph Enrichment with LLMs for Concept Representation Learning**
  - \* Constructs an evidence-grounded heterogeneous medical knowledge graph with LLM relation induction.
  - \* Enriches the graph into a text-attributed knowledge graph with LLM-generated node/edge rationales.
  - \* Jointly trains a LoRA-tuned LLM and a heterogeneous GNN to learn medical concept embeddings.| [paper](#)
- **LINKO: LLM-Augmented INtegrative Knowledge Propagation over Ontology Graphs for Health Representation**
  - \* Designed a heterogeneous multi-KG framework combining graph-augmented LLM embeddings with hierarchical GNN/hypergraph propagation across intra- and inter-ontology relations ( +7.18% PRAUC boost in diagnosis prediction.) | [paper](#)
- **LLM Adaptation and Knowledge-Augmentation methods enhancing Healthcare Predictive Tasks**
  - \* Developed RL-based adaptive KG retrieval, SFT/PPO-based LLM post-training, and recurrent soft-prompt tuning for integrating structured sequential representations with LLMs.
- **OTCSurv: Ontology-aware Temporality-based Contrastive Survival Analysis Framework**
  - \* A knowledge graph-augmented survival analysis framework which integrates contrastive learning with interpretable attention modules. Developed a supervised time-aware weighted contrastive loss with adjustable temperature (Result: +1.3% C-index and -37% MAE) | [paper](#)
- **SurvAttack: Ontology-Guided Adversarial Perturbations for Robust and Interpretable Survival Models**
  - \* A black-box adversarial attack on survival ranking models significantly degrading performance (-92% c-index).
  - \* Leveraged counterfactual insights for model interpretability and adversarial training for robustness. | [paper](#)
- **ARCI: Attentive Drug Recommendation Framework with Contrasted Intents**

- \* A sequential prescription recommendation framework using adaptive attention-based models and Intent-Aware recommendation with Contrastive Learning (Result: >+10% in PRAUC) | [paper](#)
- **Cardiac Time Series Self-Supervised Representation Learning**
  - \* Self-supervised representation learning for cardiac time series using reconstruction (AE/VAE/MAE) and contrastive methods with temporal, spatial, and spectral augmentations.
  - \* Predicting ECHO abnormalities from 12-lead ECG signals by a pretrained CNN-Transformer architecture.

## University of Kansas – Teaching Assistant

Jan. 2024 - Jan. 2025

- Data Mining (EECS 568), Fall 2025
- Advanced Data Science (EECS 835), Fall 2024, Fall 2025

## PUBLICATIONS

- **WWW 2027** | Dual-Scale Relational Graph Transformers for Ecosystem-Aware Fraud Detection, **1<sup>st</sup> author** | [under review](#)
- **ICLR 2027 - Full Research Paper** | Complementary Evidence Reasoning over Structured and Unstructured Electronic Health Records, **3<sup>rd</sup> author** | [under review](#)
- **ICLR 2027 - Full Research Paper** | StealthAlignment: Continual LLM Safety Alignment with Adaptive, Recalibrated Evolutionary Adversarial Pools, **3<sup>rd</sup> author** | [under review](#)
- **EMNLP 2026 - Full Research Paper** | REFINE: LLM Refinement over Budgeted Text-Attributed Relational Graphs for Personalized Medical Concept Representation, **1<sup>st</sup> author** | [paper](#)
- **EMNLP 2026 - Full Research Paper** | Import What You Need: Learning When and How to Augment EHR Graphs with External Knowledge, **2<sup>nd</sup> author** | [paper](#)
- **EMNLP 2026 - Full Research Paper** | RASPER: Reward-Aligned Summarization of Clinical Notes for EHR Outcome Prediction, **2<sup>nd</sup> author** | [accepted](#)
- **ACL 2026 - Full Research Paper** | Text-Attributed Knowledge Graph Enrichment with Large Language Models for Medical Concept Representation, **1<sup>nd</sup> author** | [paper](#)
- **ACL 2026 - Full Research Paper** | RePromptT: Recurrent Prompt Tuning for Integrating Structured EHR Encoders with Large Language Models, **3<sup>rd</sup> author** | [paper](#)
- **IEEE ICDE 2026 - Full Research Paper** | MetaDrug: Multi-Level Meta-Learning on Cold-Start Patients for Prescription Recommendation, **2<sup>nd</sup> author** | [paper](#)
- **CIKM 2025 - Full Research Paper** | Multi-Ontology Integration with Dual-Axis Propagation for Medical Concept Representation, **1<sup>st</sup> author** | [paper](#)
- **NeurIPS 2025 - NPGML Workshop** | Temporal Directed Graph Learning for Account Takeover Fraud Detection, **1<sup>st</sup> author** | [paper](#)
- **ACM Transactions on Computing for Healthcare - Journal Paper** | SurvAttack: Black-Box Attack on Survival Models through Ontology-Informed EHR Perturbation, **1<sup>st</sup> author** | [paper](#)
- **Biopharmaceutical Statistics 2025 - Journal Paper** | Recurrent Neural Networks and Attention Score for Personalized Prediction and Interpretation of Patient-Reported Outcomes, **2<sup>nd</sup> author** | [paper](#)
- **CIKM 2024 - Full Research Paper** | Contrastive Learning on Medical Intents for Sequential Prescription Recommendation, **2<sup>nd</sup> author** | [paper](#)
- **TKDD 2024 - Journal Paper** | Discovering Time-Aware Dependency in Electronic Health Records through Personalized Hidden Graph Inference, **2<sup>nd</sup> author** | [paper](#)
- **AMIA 2024 - Full Research Paper** | Meta-Learning on Augmented Gene Expression Profiles for Enhanced Lung Cancer Detection, **2<sup>nd</sup> author** | [paper](#)
- **CIKM 2023 - Full Research Paper** | Contrastive Learning of Temporal Distinctiveness for Survival Analysis in Electronic Health Records, **1<sup>st</sup> author** | [paper](#)

## EDUCATION

### Doctor of Philosophy, Computer Science

Jan. 2022 - May 2027

University of Kansas, USA; Focus: Knowledge Graphs, LLMs, Relational Models

### Master of Science, Computer Science

Jan. 2022 - May 2024

University of Kansas, USA; Focus: Time Series Analysis, Explainable AI

### Bachelor of Science, Mechanical Engineering

Sep. 2016 - Mar. 2021

Isfahan University of Technology, Iran

## PROFESSIONAL SERVICES

Peer Reviewer: NeurIPS, ICLR, KDD, CIKM, SDM, IJCAI, TKDD, Journal of Biomedical Informatics