

# KHUONG NGUYEN

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## RESEARCH INTERESTS

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Natural Language Processing (NLP), Large Language Models (LLMs), Trustworthy AI

## EDUCATION

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### University of Virginia

Master of Computer Science

– CGPA: 4.00/4.00

– **Graduate Coursework:** Data Mining, Graph Machine Learning, Machine Learning, NLP, Computer Networks, Datacenter Network Infrastructure, Economics of Distributed Systems, Risk Analysis.

Charlottesville, VA

Expected May 2026

### Hame University of Applied Sciences

B.Eng. Electrical and Automation Engineering

– GPA: 4.92/5.00

Finland

Jun 2023

## RESEARCH EXPERIENCE

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### GRACE: Graph Reasoning with Adaptive Correlated Equilibrium

Graduate Research Project, University of Virginia

Oct 2025 – Dec 2025

Charlottesville, VA

- Designed and implemented a game-theoretic mediator using Correlated Equilibrium (CE) to optimize for trustworthiness in a graph-based QA system, prioritizing reliability over simple accuracy
- Trained the CE policy by simulating payoffs for a joint-action space (e.g., retrieve, refuse), enabling the system to learn optimal strategies for calibrated abstention
- Improved explainability by aligning policy actions with graph signals (node reliability, path coherence) and generating automatic justifications.
- Validated the system's trustworthiness using a net utility metric (balancing accuracy, cost, and abstention) and BERTScore, proving its ability to avoid errors that a baseline model would make on low-confidence questions

### Adaptive Context GraphRAG

Graduate Research Project, University of Virginia

Feb 2025 – Apr 2025

Charlottesville, VA

- Enhanced the GraphRAG pipeline by implementing an adaptive Leiden community detection algorithm; dynamically tuned the resolution parameter based on query context to optimize community granularity for improved semantic grouping
- Achieved a 20% boost in cross-cluster semantic similarity and reduced LLM token usage by 10% through a hybrid retriever that balances local neighborhood exploration with global graph queries (Cypher on 100+ node graphs)
- Led a 3-person team using Agile practices (weekly stand-ups, task allocation, peer presentations), ensuring steady progress and peer-reviewed deliverables

### Donor Acceptance Modeling in Healthcare Analytics

Graduate Course Final, University of Virginia

Apr 2025

Charlottesville, VA

- Conducted RFM-based segmentation using hierarchical and k-means clustering to identify optimal patient groups via BIC and elbow analysis.
- Implemented Bayesian log-odds correction to address class imbalance, significantly improving probability calibration for rare-event data.
- Developed and validated an XGBoost model for pediatric donor heart acceptance, utilizing cost-sensitive threshold optimization to minimize clinical risk.
- Assessed interpretability using permutation-based importance, identifying critical clinical predictors including donor-recipient distance and age.

## PROFESSIONAL EXPERIENCE

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### IT Consultant

Dec 2022 – Dec 2024

Netcompany

Vietnam

*Delivered full-cycle cloud and web application solutions to public and private sector clients—driving requirements analysis, solution design, customization, development, and client acceptance.*

- Developed and integrated custom Java modules on a Spring Boot platform, tailoring solutions to client requirements and accelerating delivery timelines by 25%.
- Orchestrated the phased migration of a legacy banking monolith to microservices by containerizing applications with Docker for an AKS platform built with Terraform and Kafka, reducing release cycles from quarterly to weekly and cutting infrastructure costs by 20%
- Achieved an 4x performance improvement on a critical report, cutting runtime on a 20M+ row Oracle table by analyzing execution plans to detect and optimize slow-running SQL scripts with CTEs, materialized views, and partitioning
- Built 12+ BI pipelines in Azure Data Factory to move and transform data from PostgreSQL and REST APIs into Azure Synapse, enabling 5 client-facing Power BI dashboards that reduced manual reporting time by 40%
- Drove Agile delivery across teams in Vietnam and Europe, accelerating feature delivery by 20% on average while ensuring alignment with evolving client priorities and change requests

### Failure Analysis Intern

Aug 2022 – Oct 2022

Intel Products Vietnam

Vietnam

*Supported failure analysis and process improvement for semiconductor manufacturing—driving root cause investigation, documentation standardization, traceability enhancements, and analysis cycle time reduction*

- Collaborated with engineers to streamline and implement consistent root-cause frameworks, driving a 30% reduction in recurring failures across chip platforms
- Analyzed 50+ chip failure cases using statistical methods and data visualization to identify recurring defect patterns and reduce investigation cycle times
- Led a pilot knowledge-transfer workshop for new FA interns, enabling faster onboarding and consistent methodology adoption

## UNIVERSITY SERVICE & LEADERSHIP

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### Facility Supervisor

Aug 2025 – Present

UVA Recreation Memorial Gymnasium

Charlottesville, VA

- Supervise facility operations and ensure safety compliance for university recreational spaces.

### Student Orientation Leader

Aug 2021 – Aug 2022

Hame University of Applied Sciences

Finland

- Led the onboarding process for new and exchange students, organizing orientation activities and providing guidance on academic culture.

## SKILLS & CERTIFICATIONS

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**Certifications:** Azure Solutions Architect Expert, Azure Developer Associate, Azure Administrator Associate

**Languages:** Python, Java / Java EE, R, C++, C#/.NET, Rust, SQL, JavaScript/TypeScript

**Machine Learning & AI:** PyTorch, TensorFlow, Scikit-learn, LangChain, RAG, Hugging Face, Neo4j, NetworkX

**Cloud & Infrastructure:** Azure, AWS, Docker, Kubernetes, Terraform, Kafka, PostgreSQL, DynamoDB

**Web Technologies:** Spring Boot, React, Angular, Node.js, REST API, Microservices