HIEU Q. NGUYEN

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Data Scientist specializing in Natural Language Processing (NLP), Computer Vision (CV), and Generative AI • Ph.D. Candidate in Computer Science • Enhancing decision-making and market competitiveness through AI-driven solutions

TECHNICAL SKILLS

Experience	Machine Learning, NLP, Computer Vision, Generative AI, Statistical Analysis, Data Mining
Programming	Python, R, SQL, PyTorch, TensorFlow, Keras, Scikit-Learn, Pandas, NumPy, Bash
Cloud	AWS (S3, SageMaker, Bedrock), AzureAI, Google Cloud Platform (GCP), Lambda
Tools	Git, Jupyter Notebooks, Streamlit, Huggingface

EXPERIENCE

The Hartford Financial Services Group, Inc. - *AI/ML Technical Lead* May 2021 - Present

Technical Lead at Language AI Enablement Department— Aug 2024 - Present

- Directing a team of 5 developers to design, develop, and deploy AI-driven tools, enhancing language capabilities, underwriting accuracy, and operational efficiency.
- Aligning AI initiatives with business goals by collaborating with leadership to define project vision and plan the roadmap.
- Integrating large language models (LLMs) into existing systems in partnership with engineering and IT teams, enhancing both customer and employee experiences.
- Providing technical leadership and consultation across multiple business lines, ensuring best practices in AI model development, deployment, and scalability.

Generative AI Scientist at GenAI Factory— Jan 2024 - Aug 2024

- Spearheaded the development of the conversational RAG Model from concept to full production. **Impact:** Achieved the first GenAI product at The Hartford to reach full deployment, significantly enhancing operational efficiency.
- Mentored a team of 4 interns in developing an NLP-based search system for the Legal Department, facilitating information retrieval and streamlining legal research processes.
- Improved the model's retrieval accuracy and generative capabilities, resulting in a substantial productivity boost for underwriting and legal operations.
- Collaborated with stakeholders to align AI solutions with business needs, and delivered technical presentations in the Center of Excellence, promoting best practices in Generative AI (GenAI) implementation.

Data Scientist at Small Commercial Data Science Department— Feb 2022 - Dec 2023

- Led the development and scaling of the Small Business Classification Engine using NLP, automating the classification of over 1,000 business class codes. ***Impact:*** a patent application and adoption across multiple business lines.
- Performed advanced data analysis and developed predictive models for underwriting, directly supporting data-driven decision-making.
- Partnered with underwriting teams to implement machine learning solutions, significantly enhancing operational efficiency and risk assessment.

Data Science Intern at Personal Line Data Science Department — May 2021 - Aug 2021

- Contributed to the development of an Unconstrained Loss Model (ULM) aimed at predicting loss trends and improving risk assessment for personal line insurance.
- Refined and improved the dashboard and visual mapping features
- Presented findings to senior data scientists, providing actionable insights to enhance predictive model accuracy.

Polygence Inc - *Research Mentor* 2021 - 2024

- Mentored 15+ students in AI research projects, resulting in journal publications.

Graduate Research Assistant - ML & NLP 2018 - 2024

- Conducted research on detecting hate speech, misinformation, and sarcasm, contributing to dissertation work in NLP.
- Published 10+ peer-reviewed papers on these topics. [Google Scholar]

RabitPre - *Data Science Intern* 2016 - 2017

- Developed vision-based sorting solution and implemented ORC technology.

SELECTED PORTFOLIO

AI-Powered Underwriting Engine Role: Technical Lead

· **Project Overview:** Leverage GenAI to integrate public business data and internal guidelines, aiming to revolutionize underwriting precision and efficiency.

· **Progress:** Mining business data and using LLMs to produce underwriting recommendations, integrating them with internal guidelines. Currently developing an automated system to reduce manual policy reviews by over 5,000 per week.

· **Technical Highlights:** Python, AWS (S3, Bedrock, SageMaker), LLMs (Claude, Titan), Streamlit, Web scraping.

RAG-Based Question/Answer Platform Role: Lead Developer

· **Project Overview:** Developed a Retrieval-Augmented Generation (RAG) platform tailored for underwriters, enabling efficient access to relevant underwriting guidelines and streamlining information retrieval.

· **Key Achievements:** First GenAI product at The Hartford to reach full production, reducing underwriter research time from over 10 minutes to under 10 seconds and decreasing projected operational costs by 120 times

· **Technical Highlights:** Python, AWS, Azure OpenAI(GPT3.5, GPT4o), S3, RAGAS, GitHub

Smart Classification Engine Role: Lead Developer

· **Project Overview:** Developed an NLP-driven classification engine to automate the categorization of over 1,000 business class codes, reducing manual efforts and enhancing underwriting accuracy.

· **Key Achievements:** Achieved full deployment across multiple business units, resulting in significant time savings and improved risk assessment. The solution led to a patent application and widespread adoption within The Hartford.

· **Technical Highlights:** Python, AWS, Word2Vec Embedding, hybrid KNN model, GitHub, S3, SageMaker.

Ph.D. Dissertation Role: Ph.D. Candidate

· **Overview:** Developed a novel, unified framework to automatically detect and analyze radical and offensive content on Twitter during the Covid-19 pandemic. The framework addresses the complexity of detecting multiple forms of misinformation, hate speech, and anti-government sentiment, which traditional methods for specific topics cannot fully capture.

· **Key Achievements:** Created a comprehensive detection system capable of identifying diverse forms of radical content. This framework was validated through extensive empirical studies, resulting in 7 peer-reviewed publications.

Other Projects

Search Engine for Legal Guidelines • Image Superresolution using GANs • Stock Forecasting using M-Band Wavelet-Based SVR and RNN-LSTMs • Pseudo Quantum Steganography in M-Band Wavelet Domain • Real-Time Traffic Sign Detection • Housing Price Prediction • An Ensemble Learning Framework for Short-Term Stock Prediction

EDUCATION

University of Connecticut, Ph.D. Candidate in Computer Science, GPA: 4.0
Western Connecticut State University, M.A. & B.A. Mathematics, GPA: 3.97

AWARDS

Winner of Codathon, The Hartford

- **First Place 2024:** Led a cross-functional team of data scientists, engineers, and prompt engineers to build an AI model for document summarization across various formats. Delivered a customizable solution for end users, incorporating performance evaluation metrics, and completed the project within 12 hours.
- **Data and Analytics Vertical Winner 2023:** Developed an NLP model to classify a business based on user input and deployed a prototype through a Dash app.

The Hartford Awards: Breakthrough (x3), Better the Experience (x3), Continuous Improvement/Problem Solving (x4), Inclusive in Action (x1), Be Courageous (x1)

Predoctoral Fellowship, University of Connecticut, 2022

Cigna Fellowship, University of Connecticut, 2019

Provost Best Research Award, Western Connecticut State University, 2018

Gloria Brunell Award in Mathematics, Western Connecticut State University, 2017

Outstanding Presenters Award, Joint Mathematics Meeting, 2016