

Quan Nguyen (he/him)

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Education

Master of Science in Computer Science | Expected Enrollment

Aug 2024 - May 2026

Bachelor of Science in Computer Science | Gettysburg College, PA | GPA: 4.03/4.00 (Major), 4.00/4.00 (Cumulative)

May 2024

Coursework: Data Structures and Algorithms, Data Science, Intro to Artificial Intelligence, Calculus, Linear Algebra, Statistics and Probability

Publications

* indicates co-first author

- **Nguyen, Q. H.**, Neller, T. W. (2023). A Study of Pivot-Based Neural Machine Translation Approaches. Gettysburg College (under review).
- Neller, T. W., **Nguyen, Q. H.**, Pham, P. T., Phan, L. T., Presser, C. G.M. (2023). Optimal Play of the Great Rolled Ones Game. *The Advances in Computer Games conference (ACG 2023)* (accepted).
- Nguyen, V. D.*, **Nguyen, Q. H.***, & Freedman, R. G. (2023). Predicting Perceived Music Emotions with Respect to Instrument Combinations. *Proceedings of the AAAI Conference on Artificial Intelligence*, 37(13), 16078-16086. <https://doi.org/10.1609/aaai.v37i13.26910>

Presentations

- 10/2023. "Optimal Play of the Great Rolled Ones Game." Neller, T. W., **Nguyen, Q. H.**, Pham, P. T., Phan, L. T., Presser, C. G.M. Gettysburg College Computer Science department colloquium.
- 07/2023. "Enhancing speech for Parkinson's Disease patient." **Quan Nguyen**, Hanqing Guo, Yuanda Wan, Qiben Yan. 13th annual Mid-Michigan Symposium for Undergraduate Research Experiences ([Poster](#)).
- 02/2023. "Predicting Perceived Music Emotions with Respect to Instrument Combinations." Nguyen, V. D.*, **Nguyen, Q. H.***, & Freedman, R. G. The 37th AAAI Conference on Artificial Intelligence.
- 07/2022. "Classification of obstacles encountered based on drivers' performance and eye behavior." **Quan H. Nguyen**, Maya S. Luster, Brandon J. Pitts. Purdue Summer 2022 Undergraduate Research Symposium ([Poster](#)).

Experience

Engineering Research Intern - REU

Michigan State University, MI

June – July 2023

- Collaborated with two graduate students to conduct literature reviews on existing speech enhancement techniques and their applicability to improving speech quality for Parkinson's Disease (PD) patients
- Implemented and optimized with distributed data parallel training Conditional Generative Adversarial Network (cGAN) models, with ResNet and UNet as foundational architectures, on our speech datasets of 500 samples, utilizing spectrogram representations.
- Demonstrated strong results in generating spectrograms; however, continued to refine the models to enhance fine details and address specific challenges associated with PD patients' speech.
- Presented findings and results to professors and university admissions at the Mid-Michigan Symposium 2023.
- Utilized: PyTorch, Librosa, Image processing, Signal processing, Speech recognition, Data preprocessing, generative AI.

Independent Researcher

Gettysburg College, PA

Jan – Sep 2023

- Trained direct, pivot, and their combinations (triangulation) NMT models targeting on English-French translation on subset of EuroParl.
- Implemented encoder-decoder with self-attention mechanism in PyTorch with German, Italian as pivot languages.
- Compared performance between combinations to find those can improve translation accuracy.
- Achieved the BLEU score of 38.74 (direct), around 31 (pivot), and 36-38 (triangulate) on test set.
- Utilized: PyTorch, Recurrent Neural Network (RNN), Encoder-Decoder, Attention, Natural Language Processing (NLP), generative AI.

Engineering Research Intern - REU

Purdue University, IN

June – July 2022

- Extracted data using MATLAB; clean, preprocess data with Pandas to create three datasets (drivers' behavior, eye-tracking, combined).
- Investigated human-vehicle interaction by classifying obstacles based on drivers' performance and eye behavior using Random Forest, Support Vector Machines, K-Nearest Neighbors, Logistic Regression, etc. and visualize data with Matplotlib.
- Achieved high accuracy of 86.5% for drivers' behavior, 64.3% for eye-tracking, and 88.1% for the combined approach.
- Presented research results to National Science Foundation members, Purdue University, and University of New Mexico faculty
- Utilized: Scikit-learn, Matplotlib, Pandas, MATLAB, Data visualization, Data preprocessing, Feature engineering. ([Github](#))

Teaching Assistant

Gettysburg College, PA

Jan 2022 – May 2023

- Assisted Professor in Introduction to Scientific Computation (CS 107) and Intro to Computer Science II (CS 112), helped students debug, and set up software and IDEs to increase in-class experience.
- Supported 20 students and debugged their homework in Java, Python, HTML, CSS, and JavaScript by holding office hours to enhance their learning and understanding each semester. 17 out of 20 students achieved scores greater than 80% in CS 107 in Spring 2023.
- Utilized: Java8, Python, HTML, CSS, JavaScript, Eclipse, Jupyter Notebook.

Web Intern

Gettysburg College, PA

Sep 2021 – May 2022

- Reduced time updating Dean's List by half by using Pandas to extract data from csv/xlsx file and export HTML string of students on Dean's List, grouping based on their cohort. ([Github](#))
- Crawled major/minor description and requirements using BeautifulSoup4 and converted into a PDF file for College's catalog.
- Utilized: Pandas, BeautifulSoup4, HTML, Web scraping.

Skills & Certifications

Proficient: Python | Machine Learning (PyTorch | TensorFlow | Scikit-learn | Numpy | Pandas)
Familiar: Git version control | Shell scripting | CUDA | Java | Flask | SQL | HTML | CSS | LaTeX | Big data | Ubuntu Linux
Certifications (Coursera): [DeepLearning.AI TensorFlow Developer Professional Certificate](#) | [Deep Learning Specialization](#)
Certifications (CodePath): Advanced Software Engineering (8/2022)

Honors & Awards

- Michigan State University | Engineering Summer Undergraduate Research Experience (EnSURE) Fellowship **June 2023**
 - An “internship in graduate school” for undergraduate students to conduct research with a faculty mentor at Michigan State University (MSU).
- Google | CS Research Mentorship Program Scholar **Sep 2022**
 - Accepted to a three-month program that matches students with Google mentors and peers to support their pursuit of computer science research pathways. ([List of scholars](#)).
- Purdue University | NSF Cyber-Physical Systems (CPS) Summer Intensive Research Fellowship **June 2022**
 - A grant awarded to undergraduates by the NSF to conduct research in CPS via the Summer Intensive Research Internship program.

Projects

- Monte Carlo Localization solves robot Kidnapping** | Team of 4 [Github](#)
- Implemented code to control Cozmo robot taking pictures of its surrounding environment, Monte Carlo Localization (MCL) algorithm, and computer vision to identify its current position from pictures.
 - The robot could rotate back to its original position after being kidnapped by being rotated at an arbitrary angle.
 - Utilized: Numpy, OpenCV, Monte Carlo Localization.
- Music Emotion Recognition (MER) - Research** | Team of 2 [Github](#)
- Conducted research about MER on mixed and timbre-separated datasets (using Wave-U-Net for timbre separation) .
 - Implemented Convolutional Recurrent Neural Network (CRNN) model to determine the arousal and valence level of music pieces.
 - Presented research paper concluding that models trained on mixed dataset yielded better results at 37th AAI 2023 Conference.
 - Utilized: TensorFlow, Pandas, Numpy, Wave-U-Net, CRNN, Image processing, Signal processing, Computer Vision.
- eBay ML Challenge 2022** [Github](#)
- Finetuned pretrained BERT-based models on eBay’s data for Named Entity Recognition (NER) task (product brand, color, etc).
 - Ranked 30 on leaderboard with the best F1-score of 0.729 using Bidirectional Encoder Representations from Transformers (BERT).
 - Utilized: PyTorch, Large language model (LLM), Hugging Face, Long short-term memory (LSTM), Natural Language Processing (NLP).

Activities

- Gettysburg College Association for Computing Machinery (ACM) | Member Sep 2021 – Present
- Gettysburg College Vietnam Student Association (VSA) | Member Sep 2021 – Present