Quan Nguyen (he/him)

quan.nh2002@gmail.com | 717 420 6671 | quanhnguyen232.github.io | QuanHNguyen232 | quan-h-nguyen

Education

Bachelor of Science in Computer Science | Gettysburg College, PA | GPA: 4.03/4.00 (Major), 4.00/4.00 (Cumulative) May 2024

Publications

*** denotes equal contribution**

- 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

Experience

Research Intern - REU **Michigan State University, MI** **June – July 2023**

- Project Title: Adversarial Voice Attack and Defense.
- Project Description: The project will first focus on conducting a measurement study of existing voice assistants in the presence of adversarial voice attackers. Then, we propose to study the defense against adversarial attacks. The defense follows the principle of defense-in-depth to design and develop system tools to 1) prevent the adversarial attack, 2) decrease the success rate of adversarial samples, 3) increase the cost of attackers

Engineering Research Intern - REU **Purdue University, IN** **June – July 2022**

- Investigated human-vehicle interaction by classifying obstacles based on drivers' performance and eye behavior using Scikit-learn. Achieved high accuracy of 86.5% for drivers' behavior, 64.3% for eye-tracking, and 88.1% for the combined approach.
- Extracted data using MATLAB and synchronized data, retrieved observation windows with Pandas to create three datasets for analysis (simulator, eye-tracking, combined).
- Presented research results to National Science Foundation members, Purdue University, and University of New Mexico faculty
- Utilized: Scikit-learn, Pandas, MATLAB. (**Github**)

Teaching Assistant **Gettysburg College, PA** **Jan 2022 – Present**

- Assisted Professor in Intro to Computer Science II, helped students debugging, set up software and IDEs to increase in-class experience.
- Supported more than 16 students and debugged their homework in Java, Python, HTML, CSS, and JavaScript by holding office hours to enhance their learning and understanding.
- 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.
- Updated Gettysburg College's website with HTML to keep the website up-to-date with latest news.
- Utilized: Pandas, BeautifulSoup4, HTML.

Honors & Awards

- 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)

Projects

Monte Carlo Localization solves robot Kidnapping | Team of 4 **Github**

- Implemented code to control Cozmo robot taking picture of its surrounding environment, then rotated it by an arbitrary angle (kidnapping).
- Implemented Monte Carlo Localization (MCL) to help robot rotate back to original 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 Tensorflow RCNN model to determine the arousal and valence level of music pieces (circumplex emotion model).
- Presented research paper concluding that models trained on mixed dataset yielded better result at 37th AAAI 2023 Conference.
- Utilized: TensorFlow, Pandas, Numpy, Wave-U-Net, CRNN.

eBay ML Challenge 2022 **Github**

- Finetuned pretrained BERT-based models on eBay's private data for Named Entity Recognition task (product brand, color, etc).
- Ranked 30 on leaderboard with the best F1-score of 0.729 using BERT (among BERT, BERT-BiLSTM, and BERT-BiLSTM-CRF).
- Utilized: PyTorch, Pandas, Hugging Face.

Flask Deploy YOLOv6 **Github**

- Deployed pretrained PyTorch YOLOv6 to make it accessible online with Flask.
- Built API to upload and return detected image and allow user to select specific object to detect.
- Utilized: PyTorch, Flask, API.

Android Figurine Detection App **Github**

- Fine-tuned object detection algorithm using TensorFlow to detect Android figurines.

- Optimized model with TensorFlow Lite and deployed the model on Android device programmed in Java.
- Utilized: Tensorflow Lite, Python, Java, Android Studio.

YOLO Replication for Human Detection **Github**
- Filtered human images from PASCAL-VOC dataset with Pandas and Numpy to generate human detection dataset.
- Reimplemented object detection model based on YOLO architecture with Pytorch, OpenCV.
- Utilized: Pytorch, OpenCV, Numpy, Pandas.

Football Player Classification | Team of 3 **Github**
- Predicted NFL team winning rate based on team statistics from the 2021 season by using Linear, Ridge, Lasso regression models from Scikit-learn. Achieved 68.2% accuracy.
- Classified individual NFL players into their correct position based on their individual statistics using kNN, SVM, Random Forest, Decision Tree models. Accuracy: 77.1%.
- Oversampled to handle imbalanced dataset.
- Utilized: Scikit-Learn, Pandas, Regression, Classification, Oversampling data.

Skills & Certifications

Proficient: CUDA | Java | Machine Learning (PyTorch | TensorFlow | Scikit-learn | Numpy | Pandas | OpenCV)
Familiar: C# | ASP.NET | Flask | SQL | HTML | CSS | LaTeX | Linux
Certifications (Coursera): DeepLearning.AI TensorFlow Developer Professional Certificate | Deep Learning Specialization
Certifications (CodePath): Advanced Software Engineering (8/2022)

Leadership Experience

Patrol Leader **Pathfinder Scouts Vietnam (PSV)** **Jun 2012 — Jun 2020**
- Joined 11 troop camps and survival camps.
- Led a team of five participating in three national jamborees and an International Patrol Jamboree in Korea (2018).
- Trained nine new scouts who then became prominent scouts and outstanding leaders.

Activities

- Gettysburg College Association for Computing Machinery | Member Sep 2021 – Present
- Gettysburg College Vietnam Student Association | Member Sep 2021 – Present

Non-related Work

Course Cluster - Gettysburg College **Github**
- Built a program combining between Intro to Computer Science II and Accounting class that allows user to add income and spending each month and save data in JSON file using Jackson, and JavaFX for GUI. Then exported data as PDF file using PDFBox, listing all transactions and a bar chart based on data while crawling real-time exchange rate using Jsoup.
- Utilized: JavaFX, Jsoup, Jackson, JSON.simple, PDFBox.

Back-end Development Intern **Maico Group, Vietnam** **May — Jun 2021**
- Built minesweeper game using from basic to advance knowledge in C# (OOP, Enumeration, Lambda expression, Delegates).
- Created to-do list, Pomodoro timer using ASP.NET, SQL, and Entity Framework to connect with PostgreSQL database.
- Utilized: C#, ASP.NET, SQL, PostgreSQL, Entity Framework.