Huong Pham

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EDUCATION

Master of Science in Computer Science, Software Engineering Concentration **Graduated Dec. 2022**
The University of Texas, San Antonio | GPA: 3.66
Bachelor of Science in Computer Science **Graduated Dec. 2018**
The Catholic University of America, Washington, D.C. | GPA: 3.45
Honors & Awards: Dean's List Spring-Fall 2017, School of Engineering's Scholarship

RESEARCH INTEREST

- Machine Learning & AI in Healthcare
- Computational Biology & Bioinformatics
- DNA Nanotechnology & DNA-Based Data Storage
- Theoretical Computing & Algorithm Design

RESEARCH PROJECTS

- **Protein-Protein Interaction Prediction Using Graph Neural Networks (Work in Progress)**
  Developing a GCN-based protein-protein interaction prediction model in PyTorch Geometric (PyG) with optimizations for faster training, focusing on enhancing performance with large-scale datasets like STRING and BioGRID. Ongoing work includes optimizing graph architectures and evaluating model generalization across diverse protein families.

- **Computational drug-likeness prediction for blood-brain barrier penetration**
  Developed machine learning models (Logistic Regression, Random Forest, Gradient Boosting, SVM, KNN) to evaluate molecular descriptors and physicochemical properties to predict blood-brain barrier permeability for drug discovery classification. Designed and analyzed the best models using GridSearchCV for hyperparameter tuning, improving model performance, preventing overfitting, and enhancing prediction accuracy.

- **Machine learning for early detection of mental health disorders**
  Applied natural language processing and three supervised machine learning classification approaches to diagnose mental health conditions based on 51,704 text statements. Preprocessed data using word tokenization and TF-IDF vectorization to convert text data to numeric features for machine learning models to achieve a high accuracy of 85%.

- **AI-driven multi-disease risk assessment for cardiovascular disease and breast cancer**
  Employed 6 supervised ML approaches to create a comprehensive multi-modal for assessing the risk of cardiovascular disease and breast cancer diagnosis using clinical datasets. By leveraging advanced feature selection and ensemble learning, the model improves diagnostic precision by 5-10%, enabling early intervention strategies and personalized healthcare solutions.

- **Cloud-scale deep learning processors for AI acceleration**
  Developed an in-depth analysis of cloud-based AI processing architectures, focusing on optimizing deep neural networks for real-time inference. The study explored edge-cloud AI frameworks and interpreted cloud computing pain-point from large-scale software engineering datasets.

- **Autonomous car with object detection** (IEEE Publication)
  Developed and trained CNN and DNN models to enable a low-cost RC car to autonomously navigate an indoor environment, achieving effective lane-following and stop-state detection using a Haar classifier and ultrasonic sensing. Comparative analysis with VGG16 and DenseNet revealed that lightweight models can achieve competitive performance with optimized training and architecture selection.

PROFESSIONAL EXPERIENCE

Data Analyst

Lowe's Companies, Inc, Remote | April 2023 - Present

- **Conduct data-driven research** to optimize space allocation strategies, leveraging statistical analysis and business intelligence insights.
- Implement advanced Excel, SQL, and visualization tools to **extract, validate, and analyze large datasets**, ensuring high data accuracy for informed decision-making.
- Collaborate with cross-functional teams, **applying quantitative methods and analytical frameworks** to assess category adjacencies and enhance store layout efficiency.
- Utilize **data modeling and forecasting to predict business trends and optimize resource allocation**, contributing to research-based decision-making processes

Computer Science Teaching Assistant

The University of Texas at San Antonio | Jan 2022 - May 2022

- **Instructed and mentored** over 80 students in database systems and programming, fostering critical thinking and problem-solving skills in SQL, Java, and database design.
- **Conducted structured code reviews**, providing detailed feedback on Java and SQLite assignments to enhance code efficiency, debugging techniques, and best practices.
- **Led one-on-one tutoring sessions and group workshops**, improving student performance by 30%, focusing on debugging, query optimization, and algorithm efficiency.
- Evaluated assignments and projects using **objective grading rubrics**, ensuring fair assessment and constructive feedback to support student learning outcomes.

Data Analyst

Stop & Shop Supermarket Company, Quincy, MA | Feb 2019 - Jul 2021

- **Conducted quantitative research and exploratory data analysis (EDA) on sales performance**, utilizing SQL and statistical methods to drive strategic product assortment decisions.
- **Developed and maintained data pipelines,** ensuring accurate categorization of product metadata (UPC, SKU) for efficient inventory management.
- **Applied optimization techniques and algorithmic modeling** to improve planogram (POG) efficiency using JDA/BlueYonder, aligning with category reviews.
- **Provided mentorship and training to new hires,** demonstrating leadership in knowledge transfer, technical coaching, and structured onboarding processes.
- **Led project coordination and workflow automation,** ensuring timely execution of research-backed recommendations to imp
- rove operational efficiency.

TECHNICAL SKILLS

- **Programming**: Python, Java, C, SQL, HTML, CSS, JavaScript
- **Machine Learning & Data Science**: Scikit-learn, TensorFlow, PyTorch, Pandas, NumPy
- **Databases & ETL**: SQL, PostgreSQL, MySQL
- **Cloud Computing**: AWS (Basic Knowledge), GCP
- **Visualization & BI Tools**: Tableau (Learning), Matplotlib, Seaborn
- **Version Control & Deployment**: Git, Docker, Flask