QUANG DANG – Computer Science

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RESEARCH INTERESTS:

Machine Learning, Deep Learning, Convolutional Neural Network, large language model, Natural Language Processing, Human-Computer Interaction, Cognitive Psychology and Computer Interaction, Affective Computing, Bioinformatics

Education

University of Maryland, Baltimore County (UMBC)
Ph.D. in Computer Science (Expected 2026) 1/27/2023 - Now
GPA: 4.0/4.0
Master of Science in Computer Science (Expected 2024) 9/01/2022 - Now
GPA: 4.0/4.0
Bachelor of Science in Computer Science 9/01/2019 – 12/25/2021
Magna Cum Laude GPA: 3.8/4.0

Howard Community College (HCC)
Associate of Arts in General Studies 9/01/2017 – 05/01/2019
Magna Cum Laude GPA: 3.8/4.0

Employment

Graduate Research Assistant 1/01/2023 – Now
University of Maryland, Baltimore County
Dprime.ai

Graduate Research Assistant 8/28/2022 – 12/31/2023
University of Maryland, Baltimore County
NOAA's Contractor

Teaching Fellow (Programing) 8/25/2021 – 12/15/2021
University of Maryland, Baltimore County

Teaching Assistant (Programing Lab) 9/01/2018 – 05/23/2019
Howard Community College

Publications

2024 D. Ta, Q. Dang, "Interpretable CNN Models for Denoising with Sinewave Signal and Noise". (Imaginary)

2024 M. Kucukosmanoglu, Q. Dang, "Insights into CNN Model Understanding: Frequency Analysis of Pupillary Data". (Imaginary)

2024 Q. Dang, M. Anoruo, H. Myla, M. Hirsch, M. Kucukosmanoglu, G. Kargosha, K. Bansal, S. Conklin, and J. Brooks, "Generalization and Specialization in Cognitive Workload Detection: A Comparative Analysis of CNN Models". (Imaginary)

2024 Q. Dang, J. Sleeman, M. Halem, Enhancing Air Quality Prediction through Bias Correction using Machine Learning on CMAQ". (Imaginary)

Presentations

2024	Presented at 104th AMS Annual Meeting, 2024, “Enhancing Air Quality Prediction through Bias Correction using Machine Learning on CMAQ”.
2023	Presented at the Society for Neuroscience (SFN), Annual Meeting 2023, “Analyzing Team Trust: Insights from Eye Data Analysis”
2023	Presented at the Society for Neuroscience (SFN), Annual Meeting 2023, "Towards a Generalizable Model to Detect Cognitive Loading Events with Eye-Tracking",

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Research Projects

2022 - Now *Automated Detection of Human Cognitive Workload Using AI*

- Project URL: https://github.com/qdang9674/EyeTracking
- Overview: Developed an AI system to automatically detect human mental states, team trust, and stress levels by predicting cognitive load using pupillary data.
- Personal contribution: Focused on data analysis and preprocessing of pupillary data, labeling cognitive events, and constructing a Machine Learning model to identify cognitive workload.

2022 -2023 *AI-Based Bias Correction for NOAA's Air Quality CMAQ Model*

- Project URL: https://github.com/qdang9674/aaBiasCorrectionCode
- Overview: Addressed systematic errors in NOAA's air quality CMAQ model by developing algorithms for bias correction.
- Personal contribution: Applied AI algorithms for bias correction, conducted data analysis on CMAQ predictions, preprocessed data, and built multiple ML models, including CNN and LSTM, to refine CMAQ forecasts.

2021 *Recommendation Portal*

- Project URL: https://github.com/tlevin1/Reccomendation-Portal
- Overview: Created a web-based application to generate surveys for user input collection, with responses stored in a SQL database.
- My Role: Designed the survey form and user input fields for the front end. On the back end, developed the functionality to store collected user input data in the SQL database.

Skill

Programing Language: Java, C++, Python, Jupiter notebook

Technique and Tools: Machine Learning (Sklearn, Tensorflow, Pytorch), Version control (Git), Exploratory Data Analysis (EDA), Time-Series Data and Statistical Analysis, Database (SQL, PostgreSQL), Operation Systems (windows, Linux)

Soft Skills: Problem-Solving, Flexibility, Collaboration, Communication

Spoken Languages: English, Vietnamese

Experience

Graduate Research Assistant **1/01/2023 – Now**
University of Maryland, Baltimore County
Dprime.ai

- Machine Learning Development: constructed machine learning models, tackling a variety of complex problems and refining algorithms for enhanced performance.
- Technical Versatility: Demonstrated adaptability by acquiring skills across multiple domains including computer engineering, database management, networking, data science, and machine learning.
- Data Collection: Developed proficiency in participant data collection, identifying and overcoming challenges.
- Project Management: Efficiently managed time and resources while juggling multiple projects.
- Communication: Regularly communicated ideas and progress in weekly team meetings.
- Small Firm Dynamics: embracing a versatile role that encompassed both technical tasks and operational tasks.
- Team Collaboration: Actively collaborated with colleagues, sharing insights and aiding in collective goals.

Graduate Research Assistant **8/28/2022 – 12/31/2023**
University of Maryland, Baltimore County
NOAA's Contractor

- Federal Contractor: Developed communication skills and adapted to NOAA's working culture.
- Preprocessing: Analyzed and visualized large datasets, improving data presentation to faculty.
- Noise Removal: Performed detrending, denoising, filtering, and analysis of time series data.
- Machine Learning Model: Optimized and improved various Machine Learning models.
- Presentation: Developed public speaking skills and delivered effective presentations.
- Weekly Report: Prepared data for weekly meetings and reported to supervisor.
- Collaborated with colleagues: enhance working efficiency.

Teaching Fellow (Programing) **8/25/2021 – 12/15/2021**
University of Maryland, Baltimore County

- Created Test: Designed programing problems and evaluated students' solutions.
- Setup Lab: Proficient in Windows, Unix, and Linux operating systems.
- Graded Project: Reviewed and graded students' code for consistency and fairness.
- Office Hours: Debugged and analyzed students' code, provided suggestions and explanations.
- Communicated with teams: to establish fair grading solutions.

Teaching Assistant (Programing Lab) **9/01/2018 – 05/23/2019**
Howard Community College

- Office Hours: Assisted students with assignments, debugging, and code evaluation.
- Lab Instructor: Explained complex concepts and solved problems to enhance understanding.
- Fixed Student Code: Gained proficiency in standard practices and rules in Computer Science.