DAVID YE
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EDUCATION

University of Washington, College of Arts & Sciences - Seattle, WA **Expected June 2025**
Bachelor of Science in Applied and Computational Mathematical Sciences (ACMS) – Data Science & Statistics
Major GPA: 3.78 Cumulative GPA: 3.72 Double Minor: Data Science, Applied Mathematics

RELEVANT COURSEWORK

Math: Multivariable Calculus, Differential Equations, Linear Algebra & Numerical Analysis, Discrete & Continuous Modeling, Mathematical Reasoning, Statistics & Probability, Discrete Mathematics
Computer Science: Machine Learning, Computer Programming, Data Visualization, Scientific Computing, Statistical Computing

SKILLS

Programming Languages: Python, R, Java, C#, MATLAB, Vega-Lite, LaTeX
Machine Learning & Data Science: Python (scikit-learn, NumPy, pandas, matplotlib, PyTorch, SciPy, OpenCV), JupyterLab and Jupyter Notebook, Tableau, Excel, Vega-Lite (interactive graphics), Observable
Languages: English – Native, Chinese – Fluent

EXPERIENCE

AI Institute in Dynamic Systems | Undergraduate Research Assistant | University of Washington **Oct 2022 – Present**

Guided by renowned data scientist J. Nathan Kutz, I work at the nexus of data-driven machine learning and dynamical systems to solve inverse problems in the field of fluid and particle dynamics. My research involves using deep learning to perform high-dimensional spatiotemporal reconstructions and forecasts from coarse grained trajectory data collected from sensors.

- Pioneered coarse-graining by integrating multi-layer binary thresholding (OpenCV) with kernel density estimation (SciPy).
- Trained Shallow Recurrent Decoder (SHRED) deep neural networks with PyTorch and achieved groundbreaking performance on full state reconstructions and forecasting of n-particle and fluid instability dynamical systems.
- Tuned hyperparameter in SHRED to limit overfitting and maximize model performance.
- Visualized the relationship between each hyperparameter and the model's evaluation metric using Excel and animated model reconstructions and forecasts with heatmaps using Matplotlib.
- Improved model accuracy by enabling the training of deep learning models on over 100GB of data by implementing data parallelism into the ML pipeline and partitioning the dataset across eight NVIDIA A40 GPUs.
- Reduced computational time by a factor of 16 by leveraging Python's multiprocessing pool to execute coarse graining pipelines in parallel across 40 CPUs.
- Presented weekly research findings and attended seminars on machine learning in dynamical systems, computational neuroscience, sensors placement, physics, and phycology.

Undergraduate Research in Statistics in Neuroscience | University of Washington **Jan 2023 – Mar 2023**

- Performed data wrangling on three-dimensional neural activity data of mice in RStudio.
- Created restricted randomization schemes for identifying statistically significant differences in neuron activity over time.
- Visualized randomization distributions and time-series neural data using ggplot2.

LEADERSHIP

Data Analysis Project Lead | MultiCare Health System, Inc. | University of Washington **May 15 – May 29, 2023**

- Led a team of five undergraduates on analyzing and presenting the effectiveness of the collaborative care model.
- Created interactive visualizations for Master of Health Administration student's capstone presentation to MultiCare.

Communications Director | Actuarial Club | University of Washington **Oct 2022 – June 2023**

- Helped plan and organize weekly club events about the actuarial profession and network with local actuaries.
- Planned quarterly events and officer meetings including a mock interview workshop.

Director of Outreach | DAWG Calisthenics Club | University of Washington **Aug 2023 – Present**

- Organizing the Ultimate 2-Minute Dead Hang Challenge for DAWG Daze 2023 and 34th Annual Students Activities Fair.

President | Bikeation Biking Club | University of Washington **Sept 2021 – June 2022**

- Organized weekly recreational group rides around Greater Seattle.
- Helped members with bike purchasing, repairing, and maintenance.