Hubert King

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Education

Rice University Houston, TX

BA Computational Applied Mathematics (2025)

- GPA: 3.80
- Coursework: Convex Optimization, Real Analysis, Numerical Analysis, Unconstrained Optimization, High Performance Computing, Matrix Analysis, Numerical Methods for Differential Equations, Probability and Statistics, Calculus I-III
- Activities: Division I Collegiate Rugby, Rice Coffeehouse, Camp Kesem

Experience

Data Science Intern Houston, TX

Predictive Analytics Lab, Baylor College of Medicine *January 2024 – Present*

- Collaborated with Dr. Charles Puelz to implement machine learning models in MATLAB and Python for classifying native and surgically reconstructed aortas based on geometric features.
- Applied K-means clustering for unsupervised learning to identify underlying patterns in the dataset.
- Trained logistic regression models on noisy patient datasets, employing VIF, ANOVA, PCA, and Lasso regularization for feature selection.
- First Author, "Morphologic Feature Identification in Native and Reconstructed Aortas of Single Ventricle Patients," submitted to *Journal of Cardiovascular Magnetic Resonance*.

Teaching Assistant Houston, TX

Department of Chemistry, Rice University *August 2022 – December 2023*

- Managed exam and homework grading and in-class socratic excersises for CHEM 121/122: General Chemistry I & II, under Drs. John Hutchinson and Kristi Kincaid.
- Led weekly office hours and course-wide recitation sessions for 300+ students.

Undergraduate Research Assistant Houston, TX

Pati Lab, Baylor College of Medicine *January 2023 – May 2023*

- Identification and evaluation of novel compounds targeting cohesin STAG2-mutant Ewing Sarcoma (EWS) with Dr. Debananda Pati.
- Implemented a data intake, manipulation, visualization, and storage platform for cell viability assays in Python.

Projects

Finite Difference Method Solver | *C++* December 2023

- Implemented Finite Difference Method engine in C++ for generating numerical solutions to the time-dependent heat equation.

Simple Pendulum PINN | *MATLAB* January 2024

- Developed a solver for the simple pendulum ODE using Crank-Nicolson method, MATLAB ode45, and Physics-Informed Neural Network (PINN) approaches.
- Independently implemented PINN network layers, forward and back propagation, gradient descent optimization, and physics-based loss function from scratch.

Rice University Rugby Club Website | *Python, Flask, MySQL* April 2023 - March 2024

- Developed and maintained team website for thousands of monthly users.
- Designed robust inventory management, customer account, and player information databases in MySQL to ensure accurate stock updates and order fulfillment.

Technical Skills

- Languages: C++, Python, MATLAB
- Frameworks: statsmodels, scikit-learn, OpenMP, MPI, CUDA, NumPy, Pandas, Flask