Henry Yu

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Education

Bachelor of Science - Computer Science **Aug 2023 - May 2027**

Indiana University, School of Informatics and Computing *Bloomington, IN*

High School **Aug 2019 - May 2023**

Memphis University School - Magna Cum Laude *Memphis, TN*

Relevant Courses

Intro to Software Systems | Data Modeling and Inference | Discrete Mathematics | Linear Algebra

Skills

Languages Python | Java | C | OpenQASM

Developer Tools Git | Docker | Kubernetes | VS Code | Visual Studio | JetBrains IDEs | Qiskit

Libraries pandas | NumPy | Matplotlib | Seaborn | scikit-learn | Keras | Pytorch

Experience

Quantum Computing Research **Sep 2023 - May 2024**

Indiana University *Bloomington, IN*

- Solo project as only first-year undergrad in research lab involving analysis of correlations between qubit features and error probability.
- As of Dec 2023, 10% increase in prediction performance over initial base model.

Private CS and Math Tutor **Sep 2023 - Dec 2023**

Indiana University *Bloomington, IN*

- Provided small custom study plans for customized learning experiences for 3 total Java, Python, and linear algebra students.
- Improved code proficiency to the point where self-dependency was achieved.
- Improved grades by an average of a whole letter grade above class average by end of semester.

Notable Projects

Influence of Qubit Features on Error Rates **Sep 2023 - Dec 2023**

Undergraduate Researcher | Python, Qiskit, scikit-learn *Bloomington, IN*

- Scraped and processed data from IBM Quantum System backends using Qiskit API.
- Ran time series analysis in the form of multiple ElasticNet regression for 7-qubit ibm_perth and 7 127-qubit machines.
- First-ever project involving the analysis of 127-qubit system features in the school.
- Nominated as one of the top posters in end-of-semester event for professionalism and deep knowledge of topics researched.

Breaking the Cycle: Reducing Recidivism in Iowa State Prisons **Sep 2022 - Apr 2023**

5-Man Team | Python, pandas, Matplotlib, Keras, LaTeX *Memphis, TN*

- Analyzed the probability of prisoners re-offending by developing a feedforward neural network.
- Tested the FNN using AUC-ROC score, SHAP analysis, multiple regressions, and Monte Carlo simulations.
- Placed 2nd nationwide with a publication; $15,000 reward split between group of 5.

Riding into the Future: Evaluating E-Bikes **Apr 2023**

5-Man Team | Python, pandas, Matplotlib, Keras, LaTeX *Memphis, TN*

- Conducted long-term impact of E-bike usage by first determining popularity of e-bikes using NLP techniques like sentiment analysis on Twitter tweets in the past year.
- Implemented many regression models like exponential regression and double gamma regression along with Monte Carlo simulations to provide a range of possible sales.
- Determined that years 2022-2025 will only see 9% increase in sales while 2025-2028 will see 54% increase.
- Found that a group of 10,000 e-bike users reduce 1190 CO_2 emissions per year, saving the government around $220,000 per year.
- Acknowledged as one of the top 3% of teams in technical computing.

Publications

- **Henry Yu**, Lou Zhou, Amar Kanakamedala, Jeffrey Liu, and Evan Wu, "Breaking the Cycle: Reducing Recidivism in Iowa State Prisons," *2023.2 ARCH*, Education and Research Section of the Society of Actuaries.