Jiayin (Joy) Liu

+1 860-796-9706 | jiayin.liu@duke.edu | https://github.com/jiayinliu25 | joyliu.org

EDUCATION

Duke University — **Durham, NC**
BS in Computer Science (Concentration in Data Science), BA in Visual & Media Studies — Aug 2021 – Dec 2025

- **GPA:** 3.9/4.0
- **Relevant Coursework:** Database Systems, Design and Analysis of Algorithms, Algorithms in the Real World, Data Structures and Algorithms, Computer Systems, Practical Financial Market, Probability
- **Activities & Awards:** Duke Quantitative Finance, Club Golf, Duke Technology Scholar, Alpha Kappa Delta Phi, High-school Cum Laude Graduate, High Honor Roll, Sanford B.D. Low Art Prize

PROFESSIONAL EXPERIENCE

Chicago Mercantile Exchange (CME Group) — **Chicago, IL**
Governance Risk and Compliance Intern — May 2024 – Aug 2024

- Develop quantitative risk tiering model for CME Group's Third-Party Risk Management (TPRM) program to drive efficiency in the initial risk-assessment process using Python with the Archer database
- Provide automation solutions, data analysis, and visualizations for the Enterprise Risk Management team to maintain and restructure the control and policy libraries

GBCS Group — **Calgary, AB**
Financial/Risk Analyst Intern — Aug 2023 – Dec 2023

- Spearhead the preparation of detailed financial analyses and forecasts derived from the raw dataset of size over 300 spanning over 20+ years, emphasizing the identification of potential opportunities for cost reduction and optimization of resource allocation to enhance financial efficiency in fleet operations
- Drive the implementation of data mapping and develop a pipeline for parsing large proprietary fleet datasets that innovatively integrate fuzzy matching and AI language processing automation solutions, delivering a comprehensive overview of fleet maintenance, mileage history, and rigorous risk analysis aligned to client needs

Asset Pro — **Shanghai, China**
Quantitative Research Intern — Jun 2023 – Aug 2023

- Adapted 6 key U.S. market-centric quantitative investing strategies ranging from high-frequency reversal factor to limit order book shape using Python, collaborating closely with supervisor to integrate multi-factor stock selection, algorithmic models
- Engineered a robust portfolio back-testing process that simulated market scenarios, generated portfolio allocations with 8 holding styles of different lengths, and assessed performance and volatility against benchmark metrics to enhance risk-adjusted returns
- Leveraged Cython and parallel processing libraries to optimize and scale proprietary factor stock selection models that utilize high-frequency transaction data by 60%

PROJECT EXPERIENCE

Kenan Institute for Ethics, Environmental Justice Lab — **Durham, NC**
Quantitative Research Assistant — Sep 2023 – Present

- Develop geocoding and data cleaning pipeline to connect 2 proprietary real estate data of over 40,000 entries with census data using ArcGIS and R with an improved 89% match rate to visualize the changes of property values over time in North Carolina to identify potential climate-driven housing inequalities
- Collaborate on data-driven sustainability-focused research projects using social sciences and computational research methods

Algorithmic Risk Assessment in Criminal Justice System: Analyzing Bias in COMPAS — **Durham, NC**
Research Collaborator — Sep 2023 – Dec 2023

- Developed 8 simplified versions of the COMPAS algorithm comprising logistic regression and neural network models using Python (TensorFlow, Scikit-Learn, pandas)
- Utilized recursive feature selection and resampling to address demographic biases and enhance model accuracy, and achieved improved accuracy of up to 0.84 on logistic regression and 0.85 on neural network model (0.78 benchmark)

"A Virtual Sense of Place: African American Urbanism" — **Durham, NC**
Lead Quantitative Researcher — Jan 2022 – Sep 2023

- Performed geo-referencing and feature tracing of architecture maps for historic African American neighborhoods in Charlotte using ArcGIS while collaborating directly with community members to gather valuable insights
- Developed an open-sourced public-facing storytelling website and geospatial data hosting pipeline that incorporated multi-layered map viewers and 3D models using JavaScript (Babylon.js, GeoServer, Bootstrap, IIIF), Fusion 360, with a focus on user interaction, history preservation, and accessibility

LEADERSHIP & EXTRACURRICULAR ACTIVITIES

Ways & Means [University Research Podcast] — **Durham, NC**
Illustrator — May 2022 – Present

- Design and illustrate cover images and episode cover images for the Duke Sanford School of Public Policy podcast, using visually appealing and engaging visuals to highlight social and political problems and potential solutions

Alpha Kappa Delta Phi — **Durham, NC**
Vice President Internal, Graphic Design & Fundraising Chair — Jan 2022 – Present

- Manage chapter operations to ensure smooth internal functioning and clear external communication between the Duke University chapter and the international leadership board; plan and organize various fundraising events

SKILLS & INTERESTS

Programming Languages: Python (pandas, Scikit-Learn, TensorFlow), MySQL, MongoDB, R, JavaScript (React), Java, C, HTML
Other Skills: MS Excel, MS PowerPoint, ArcGIS Pro, QGIS
Interests: Golf, Drawing, Painting, Printmaking