Jeffrey Lu

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Education

University of Illinois Urbana-Champaign *Champaign, IL*

B.S. in Computer Science, Minor in Game Studies and Design August 2024 – Expected May 2027

Relevant Coursework by Spring 2025: Data Structures, Software Design Lab, Computer Architecture, Discrete Structures, Calculus III, Linear Algebra, Physics: Mechanics, Physics: Electricity & Magnetism

Honors: Chancellor's Scholar (Campus Honors Program), Honors Living-Learning Community

Extracurriculars: Quant@Illinois, AQTE, SigPwny, VR Club

Relevant Experience

Northwestern University *Evanston, IL*

Research Assistant, Professor John B. Ketterson May 2023 – October 2023

- Assessed the effects of drilling holes with varying shapes and orientations on the performance of type-II superconductors
- Developed and executed bash scripts in Unix to automate CUDA simulations that determine the conductivity of superconductors with different hole configurations
- Visualized and analyzed the results using Python
- Wrote a report and presented my findings at a research symposium

Illinois Institute of Technology *Chicago, IL*

Research Assistant, Professor Jeff Wereszczynski May 2022 – September 2022

- Researched the virtual docking of ENL protein to determine potential inhibitors that may prevent leukemia
- Programmed and executed Python-based simulations to test the efficacy of various pharmaceutical drugs as inhibitors
- Co-wrote a report and presented my findings at a research symposium

Select Projects

Modeling the Future Challenge

Studied obesity in America | *Python* August 2024 – May 2024

- Employed a Random Forest model to decipher leading factors behind obesity
- Developed transition matrices as part of a Markov chain to model future obesity trends
- Ascertained the severity of risks associated with obesity and different regression models
- Formulated mathematically-based recommendations to mitigate the effects of obesity

Analyzed teacher shortage in Chicago | *MATLAB* August 2023 – May 2023

- Applied a Fourier transform and linear regression to predict future teacher shortage levels
- Incorporated a Random Forest model and performed a Sensitivity Analysis to decipher leading factors
- Devised mathematically-based strategies to address the teacher shortage crisis

MathWorks Math Modeling Challenge

Investigated the housing crisis in America | *Python* March 2024

- Created an agent-based model to simulate how the housing market will change in the future
- Utilized Fourier transform and linear regression to forecast trends in homelessness
- Combined a Random Forest model with the previous models to put forth recommendations to combat the housing crisis

Predicted the importance of electric bikes (e-bikes) in future America | *Python* March 2023

- Applied a Systems Dynamics approach to detail future trends of e-bike sales
- Constructed a Predator-Prey Model to quantify the impact e-bikes will have on American carbon emissions, traffic congestion, and health

Other Experience

Marshalls May 2024 - August 2024

- Assisted customers with inquiries and resolved any issues to enhance their shopping experience
- Collaborated with team members to ensure store operations ran smoothly, including closing duties
- Supported promotional and sales events by setting up displays and assisting customers with product selections

Skills

Programming Languages: C, C++, Java, Python, Bash, HTML, CSS, Typescript, MDX, Javascript

Platforms: Visual Studio, VS Code, Jupyter Notebook, Anaconda, Git, Unix, PyCharm