

Blaine Hill

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EDUCATION

- **The University of Illinois Urbana-Champaign** Urbana, IL
Master of Science in Computer Science; GPA: 3.76 August 2022 – May 2024 (Expected)
Coursework: Statistical RL, Transfer Learning, Algorithmic Market Microstructures
Activities: Quant @ Illinois - Research Division, Data Structures Teaching Assistant, iDEA Lab
- **University of North Carolina at Chapel Hill** Chapel Hill, NC
Bachelor of Science in Computer Science and Statistics and Analytics; GPA: 3.68 August 2019 – May 2022
Coursework: Stochastic Modeling, Probability, Data Structures, Algorithms, Discrete Math, Linear Algebra
Activities: Carolina Analytics and Data Science (CADS), UNC Finance Society, LUPA Lab

EXPERIENCE

- **Cutler Group** San Francisco, CA
Quantitative Trading Intern July 2023 – August 2023
 - Practiced mock trading, market-making, and options theory.
 - Reconstructed time decay profiles to improve theta decay model accuracy by X% using historical data.
 - Automated skew analysis to alert traders to imbalanced hyperparameters.
- **Google** Mountain View, CA
Software Engineer Intern, YouTube Ads April 2023 – July 2023
 - Improved ad quality by applying conditional multimodal generative AI models CTRL and MMUM to automate advertiser-friendly campaigns, improving ad evaluation by X% using ad attributes as features.
 - Collaborated with Google Research to finetune internal models; a industry paper is under review at WWW '24.
- **Capital One** Richmond, VA
Software Engineer Intern, Customer Experience Team May 2022 – August 2022
 - Constructed a sentiment analysis pipeline in Python using HuggingFace Transformers models.
 - Used for managing real-time customer feedback; improved proprietary satisfaction index by X%.
 - Deployed pipeline on Amazon Web Services with SQS, Lambda, and DynamoDB microservices.
- **IQVIA** Durham, NC
Software Engineer Intern, Internal Vendors Team May 2021 – August 2021
 - Designed an invoice parser to automate information extraction through modeling in Python, saving over \$0.XM annually by billing vendors with parsed invoices.
 - Utilized the PyTesseract library for optical character recognition of invoices.
 - Implemented a graph convolutional neural network to incorporate both spatial and semantic information.

PUBLICATIONS

- **Ginkgo-P: General Illustrations of Knowledge Graphs for Openness as a Platform** WSDM '24
Blaine Hill, Lihui Liu, Hanghang Tong
 - A demo paper to both automate infrastructure for KG visualization and to codify several important KG reasoning categories: KG completion, KG question answering, KG subgraph extraction, and KG with RL optimization.
- **Conversational Question Answering with Reformulations over Knowledge Graphs** SDM '24
Lihui Liu, Blaine Hill, Boxin Du, Hanghang Tong - Under Review
 - A long paper to tackle the challenge of conversation question answering by using a learned RL policy to both reformulate natural language questions and answer them using graph data.
- **Amalgamation of Predictive Modeling and LLMs in YouTube Ads** WWW '24
Poorva Potdar, Blaine Hill, Shobha Diwakar - Under Review
 - An industry paper to combine different multimodal large language models towards improving ads in YouTube by learning the underlying characteristics of well-performing ads and using them as features.

RESEARCH

- **Generative Reasoning on Knowledge Graphs** *August 2022 – Present*
Dr. Hanghang Tong, Department of Computer Science, UIUC
 - Currently researching nascent extensions of diffusion with knowledge graphs to solve various tasks such as knowledge graph completion, policy optimization over graphically structured data, and other reasoning tasks.
- **Hypothesis-Test Driven Coordinate Ascent** *August 2021 – May 2022*
Dr. Junier Oliva, Department of Computer Science, UNC-CH
 - Explored black-box optimization via Hypothesis-Test Driven Coordinate Ascent (HDCA) to decompose the policy space and make statistically guided updates to parameters to avoid costly gradient calculations.
 - Worked on experiments and visualization of HDCA against baseline evolutionary strategies on the LunarLander environment.

HONORS / AWARDS

- ***3rd Place Pokémon Trading Card Game World Championship*** *August 2019*
 - Was invited to compete after the 2018-2019 tournament circuit.
 - Finished as the best placing American in the 2019 season.

PROJECTS

- ***Arcane***
 - Constructed a web application employing Spotify user data to generate unique personalized discographies; creates listening sessions by over 2 hours on average.
 - Utilized the React, Express.js, and Node.js stacks as well as the Spotify Web API.
 - Programmed in JavaScript, HTML and styled with the Tailwind CSS and Bootstrap frameworks.
- ***Melanoma Classification***
 - Finetuned and utilized VGG, ResNet, and ViT to classify skin cell images as malignant or benign with UNC Hospitals' patient data; obtained 87% accuracy.
 - Transformed data with rotations and flips to augment training dataset.
 - Written in Python, utilizing the PyTorch package for fluidity.

SKILLS

- **Languages:** Python, R, C++, C, Java, JavaScript, HTML, SQL
- **Tools / Frameworks:** AWS, Git, Snowflake, Keras, Tensorflow, pandas, NumPy, nltk, scikit-learn, React, Node.js, Express.js, MySQL, MongoDB, Material-UI, Tailwind CSS
- **Extras:** SIE, Jane Street Puzzle Streak, IBM Ponder This Puzzle Streak, Akuna Capital 101/201 Options Course