

Ethan Mathew

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EDUCATION

University of Illinois Urbana Champaign, *Grainger School of Engineering*

Expected Graduation: May 2026

- Bachelors of Science in Computer Science and Statistics

GPA: 4.00

PROFESSIONAL EXPERIENCE

Expedia Group, *Data Science and Analytics Intern*

May 2024 - Present

- Led comprehensive data analysis initiatives to provide detailed and actionable insights reducing escalation rates by 26%, thereby preserving Expedia brand integrity and enhancing customer satisfaction.
- Spearheaded a project to develop GenAI summarizations of global escalations, reducing the time and cost of providing insights to executives by 75% and providing unbiased insights.
- Utilized SQL, Tableau, PySpark and Python to analyze data and create a comprehensive live refresh dashboard showcasing escalation insights for executive level stakeholders to self-serve weekly summaries.

Synchrony Financial, *Data Science and Consulting Intern*

May 2023 - May 2024

- Worked with regional clients to improve marketing initiatives through geographical and consumer data analytics.
- Constructed sequence modeling frameworks used to help recognize the sentiment of client customer reviews using spaCy Named Entity Recognition model.
- Deployed algorithms using Latent Semantic Analysis (LSA) and Latent Dirichlet Allocation (LDA) to effectively extract topics from client datasets involving customer feedback in order to present constructive business solutions.

EXTRACURRICULAR INVOLVEMENT

Illinois Business Consulting, *Software Engineer*

January 2024 - Present

- Partnering with Gies College of Business to build out a database for IBC client and project information in MySQL
- Used Pinecone Vector DB to construct embeddings for project docs and compute similarity searches to user queries.
- Developed HTML form to initiate an ingestion pipeline, integrating Azure Blob upload and database integration.
- Used Slack SDK and Azure App Service to push a working internal Slackbot into production organization wide.

Undergraduate Research Assistant, *Student Researcher*

August 2023 - December 2023

- Collaborated with PhD researchers to enhance Large Language Models (LLM) focusing on generating code that strictly adheres to Context Free Grammar (CFG) constraints, contributing to improved code reliability and speed.
- Applied programming skills and machine learning fundamentals to develop tools for CFG-constrained code generation, playing a vital role in advancing natural language processing and code generation technology.

Illinois Enactus, *App Development Lead*

January 2023 - Present

- Led group of 10 students to construct metrics page and web application displaying university-wide campus water consumption as a platform for University of Illinois Housing to track water consumption across campus facilities.
- Created and prototyped water meter that attaches to university showers and tracks per minute usage.

PROJECTS

Checkpoint Based Attendance Tracker

June 2024

- Developed a checkpoint-based attendance tracker using MongoDB, Node.js, Express.js, and a React Native application to monitor fraternity member attendance
- Created a user-friendly React Native app allowing members to easily check in and monitor their attendance live

Gaia: Harvard Generative AI Earth Hack

January 2024

- Developed an AI assistant to help investors evaluate investment-worthy ideas. Based on an environmental sustainability problem and solution set inputted by the user, AI gives comprehensive text evaluation of solution
- Wrote script to perform Synthetic Data Generation, simulating a discussion between two Large Language Models (LLM) and generating the training data for which the open-source model, TinyLlama, was fine-tuned on.
- Integrated the custom fine-tuned model with Retrieval Augmented Generation capabilities, allowing the model to refer to external databases when reading unusual content, resulting in a cohesive AI assistant tool.

SKILLS

Programming Languages: Java, Python, C++, C, R, SQL, HTML, JavaScript, CSS

Libraries/Frameworks: Pandas, Numpy, Plotly, TensorFlow, Scikit-learn, Spacy, Docker, Express.js, Node.js, Tailwind CSS, React, Flask, HuggingFace, Docker, Git, MongoDB