RAM GOENKA

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EDUCATION

University of Illinois Urbana-Champaign Aug. 2021 - May 2025

Bachelor of Science in Mathematics, Bachelor of Science in Statistics, Minor in Computer Science

Relevant Coursework: Comp. Linguistics, Data Structures, Graph Theory, Machine Learning, Statistics & Probability

EXPERIENCE

Undergraduate Research Assistant: *Polymath Jr. REU* Jun. 2024 - Aug. 2024

- Researching Macaulay Rings and Posets within the field of commutative algebra with Prof. Alexandra Seceleanu from the University of Nebraska-Lincoln and Dr. Nikola Kuzmanovski from the University of Notre Dame
- Collaborated with undergraduate researchers to study if (and how) combining two Macaulay posets in various ways (cartesian, wedge, diamond products) leads to another Macaulay poset.
- Composed algorithms to analyze the additivity of posets and determine if a given poset is Macaulay. Implemented these algorithms in Macaulay2 language code for usage. Documented research findings, key theorems and code

Data Analytics Intern: *Synchrony Financial* May 2024 - Aug. 2024

- Composed complex SQL queries to join, manipulate, and analyze datasets pertaining to credit account information for over 2 million accounts. Composed queries to identify trends in data for advanced analytics
- Used SAS to develop models to predict payment timelines and perform statistical and distribution analysis as well as generate plots to study and identify trends in data. Used WinSCP for storage and management of code and data
- Utilized analytics findings to compose reports and make informed decisions about account placement to maximize financial gains

Undergraduate Research Assistant: *Smith Lab @ University of Illinois Urbana-Champaign* Aug. 2023 - Present

- Collaborated with Prof. Rebecca Lee Smith on Center for Disease Control (CDC)-funded projects to transform statistical and mathematical models into interactive RShiny applications, enhancing vector control research
- Revamped the data upload system in the application, enabling seamless dataset uploads, reducing data entry and processing times by an estimated 70% and facilitating instant visualization through descriptive plots
- Debugged and enhanced the RShiny application, enabling it to handle 15% more specimens for extensive study

Undergraduate Research Assistant: *Illinois Risk Lab* Aug. 2023 - Dec. 2023

- Collaborated with Prof. Runhuan Feng and Dr. Peixin Liu to research the evolution, history, and current state of Decentralized Autonomous Organizations (DAOs)
- Co-authored a report (link) on the historical evolution, and current state of DAOs, synthesizing research findings and case studies to provide insightful perspectives on their development and future potential

Software Engineering Intern: *COUNTRY Financial* May 2023 - Aug. 2023

- Refactored code for insurance processes and calculations on large datasets from SAS to Python using Pandas, achieving a 15% improvement in performance and speed. Implemented unit tests using PyTest for validation
- Migrated and deployed on-premises Spring applications to Microsoft Azure Cloud, enhancing efficiency and performance. Documented the Azure deployment process for future company use
- Developed an insurance-focused generative AI model utilizing Azure OpenAI and LangChain, training it on relevant insurance concepts and company database

Software Engineering Intern: *National Center for Supercomputing Applications* Sep. 2022 - Sep. 2023

- Worked as a full-stack engineer in collaboration with the National Center for Atmospheric Research (NCAR) and Dr. Nicole Riemer to develop a web interface for atmospheric chemistry simulations pertaining to aerosol particles
- Wrote Python code to develop time-series models for tracking aerosol particle concentrations utilizing atmospheric data from NetCDF files, and D3.js for the frontend to display the plots
- Improved website backend to support larger file uploads and optimized frontend-to-backend efficiency for fast, accurate and refined plotting of data

Undergraduate Teaching Assistant: *STAT 107 - Data Science Discovery @ UIUC* Aug. 2022 - Present

- Led weekly Python lab sessions of 30 students, aiding with lab prompts, conceptual questions and debugging
- Conducted office hours for 1000+ students, offering guidance on data science concepts, programming, statistical concepts, homework problems, labs, Python micro-projects, exam reviews, and troubleshooting GitHub issues

Undergraduate Teaching Assistant: *CS 124 - Introduction to Computer Science I @ UIUC* May 2022 - May 2023

- Guided 900+ students in computer science basics and Java programming language through office hours and course forums. Hosted quiz-review sessions answering conceptual questions
- Mentored eight first-time undergraduate TAs to familiarize them with the course interface and methodologies

TECHNICAL SKILLS

Languages: Python, Java, C, C++, JavaScript, HTML, CSS, R, SQL, Kotlin, SAS, TypeScript, MATLAB, LaTeX
Tools: React.js, Node.js, Gatsby.js, Flask, Git, Pandas, PyTest, PyTorch, Docker, Django, Bash, Microsoft Azure, MongoDB