

Gabriel Eze

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EDUCATION

B.Sc. Data Science & Mathematics, Centre College

08/22 – 05/26 | GPA: 3.55

Relevant Coursework: **Abstract Algebra, Advanced Interpolation Methods, Applied Machine Learning, Bayesian Data Analysis, Building AI-Powered Applications, Data Manipulation & Visualization, Linear Algebra I & II, Mathematical Statistics, Probability Theory, Python Programming and Problem Solving, Real Analysis, Statistical Modeling.**

SKILLS

Computing — Harmonic Analysis, Logic, Q-Ball Imaging

LLM — Chunking, Doc2Query, Embeddings, Hit@K, Prompt Engineering, Red-Team Testing, Tool Use

Programming — MATLAB, Python, R, SQL

Tools — ChromaDB, Endpoints, Git, JupyterLab, LaTeX, MySQL, Pydantic, Quarto, Regex, Tableau, VS Code

RESEARCH

Stack Domination Density of Hypercubes, Graph Theory

05/25 – 08/25 | Dr. Brauch, Dr. Wiglesworth

- Formulated and proved results for stack domination density in $C_m \times P_2 \times P_n$, deriving bounds across residue classes of m .
- Designed modular “Clockwise” and “Domination” algorithms to construct minimal dominating sets and validate proofs through large-scale computation.
- Co-authored a 38-page research manuscript integrating combinatorial proofs and algorithmic verification for potential undergraduate publication.

Pitch Modeling, Carnegie Mellon SURE Camp

06/24 – 07/24 | Quang Nguyen, Dr. Yurko

- Conducted advanced statistical analysis and modeling to predict pitch effectiveness (Stuff+) for MLB players, leveraging large datasets from FanGraphs and Baseball Savant.
- Applied Random Forest, Lasso regression, and HGBR models to analyze the complete arsenal of pitches per pitcher, enhancing predictive accuracy by modeling multiple pitch types and providing competitive RMSE results.
- Developed a pitch recommendation tool that provided actionable insights for MLB teams, optimizing player performance by suggesting ideal pitch sequencing based on past game data.

Sports Analytics

05/23 – 07/23 | Dr. Heath, Dr. Poudel

- Utilized Python to lead data cleaning and parsing efforts within a complex big data pipeline, ensuring data accuracy and reliability for basketball game analysis.
- Tracked possession data and employed advanced statistical techniques to assess player substitutions, providing vital insights for informed coaching decisions and game outcome analysis.
- Collaborated on the development of win probability models based on real-time game data, empowering the coaching staff with actionable insights for strategic game planning.

PERSONAL PROJECTS

Forest Fire Simulation

11/22 – 12/22

- Designed class-based forest simulation modeling state transitions on a 10×15 grid.
- Implemented probabilistic burn dynamics and interactive GUI controls.

DNA Sequence Analysis

10/22 – 11/22

- Developed sliding-window STR detection algorithm to quantify repeat sequence from genomic input.
- Parsed CSV database and programmatically matched repeat counts to identify genetic profiles.

AWARDS

Best Visualization, ASA DataFest (EKU)

2025

Analyzed national office leasing data to deliver strategic market insights for Savills in 3-day competition.