

# Jack Hamilton

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## DATA SCIENCE

Ambitious third year Computer Science Major and Data Analytics Minor who is looking for an opportunity in working on computational analysis within quantitative and financial fields. Possessing a strong foundation of programming and statistics, complemented by experience working with machine learning tools, algorithms, and analyzing big data. Known for exceptional organizational skills, quick learning ability, and effective communication of complex results. Adaptable and eager to apply technical expertise to real-world challenges in a professional setting.

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## SKILLS

Python	Data Analysis (Pandas, MySQL, and Excel)	Strong communication skills
SQL	Data Visualization (matplotlib and plotnine)	Desire to learn and grow
Java	Modeling Dynamical Systems	Exceptional organizational skills
HTML/CSS	Monte Carlo Simulations	Great problem solving skills

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## PERSONAL PROJECTS

### Music Analysis: [finalproject-musicanalyzer.ipynb](#)

I analyzed the similarities and differences between the most popular songs from 1953 and the most popular songs from 2023. I first created 7 different categories of code that I individually analyzed Tempo, Timbre, Major : Minor (ratio of Major to Minor chords), Lyric Sentiment, Memory, and 3 Librosa Functions. Then I put these 6 components and created a Total Score that tells how complex songs are and how structurally different the top songs from 2023 are to the top songs from 1953. I used Pandas, matplotlib, librosa, scipy, and other python packages to complete this project.

### Modeling the System Dynamics of Malaria in Rwanda: [malaria-research.ipynb](#)

I researched the contraction patterns of malaria and the relationship between the disease in humans with mosquitoes. I first created SIR models and wrote differential equations to replicate the lifecycle of malaria in both humans and mosquitoes. Then I used ODEint in the scipy package and created models to simulate what malaria will look like in Rwanda for the next 60 months. After this step, I took into account that a vaccination will be made, so I adjusted my equations and function for the models to display graphs that represent what malaria will look like in Rwanda for the next 60 months.

### Midterm Election Predictions for the Senate: [predicting-the-mid-term-elections.ipynb](#)

For this project, I analyzed the 2024 U.S. Senate elections, focusing on swing states. I aggregated polling data from FiveThirtyEight, then cleaned and prepared it to determine candidates' odds of winning in each state. Using numpy's random.normal function, I developed an equation to account for margin of error in the polls. Finally, I implemented Monte Carlo simulations to predict Senate race outcomes in key swing states, providing a data-driven forecast for the 2024 election.

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## EDUCATION & CERTIFICATIONS

### Hendrix College (August 2022 - Present)

Computer Science Major & Data Analytics Minor

### Universitat Pompeu Fabra (Spring 2025)

Studying Data Science Abroad

### Kaggle Learn

Completed all of the "Learn" certifications

### Microsoft Data Science Course

Currently Completing this Certification

## EXTRACURRICULAR ACTIVITIES

### Hendrix College Men's Soccer

Three year letter winner of NCAA Men's Soccer program

### Hendrix Programming Team

Meet every week to program

### Hendrix Volunteer Action Committee

Organized volunteering on weekends