

Gisselle Pombar

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EDUCATION

SOFTWARE ENGINEERING CAREER COURSE

Boca Code

Boca Raton, FL

March 2023

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Master of Science, Chemistry

Cambridge, MA

September 2022

UNIVERSITY OF CENTRAL FLORIDA

Bachelor of Science in Chemistry, *Magna Cum Laude*

Orlando, FL

May 2019

SKILLS

Technical Skills

- **Programming Languages:** JavaScript | Typescript | Python | MATLAB | HTML | CSS |
- **Technologies:** React | React Native | AWS | Express | Git | Node.js |

Languages: Fluent in English and Spanish.

Awards: NSF Graduate Research Fellowship Program: Three-year annual stipend of **\$37,000**. Ford Foundation Fellowship: Three-year annual stipend of **\$25,000**. MIT Dean of Science Fellowship: Full Tuition covered.

PROJECTS

ECHO - Spaced Repetition Flashcard Full-Stack Web App [LIVE](#) | [REPO](#)

March 2023

- Developed a full-stack web application, Echo, that uses spaced repetition to help users memorize new information.
- Utilized React and JavaScript to design and implement an interactive and user-friendly interface for flashcards.
- Implemented a custom-spaced repetition algorithm in the backend using Node.js and Express.js to optimize learning and retention for each user.
- Designed and deployed a MongoDB database on Azure to store user data and flashcards, ensuring the scalability and reliability of the application.
- Hosted and deployed the frontend on GCP for optimal performance, and hosted and deployed the API on AWS for improved security and speed. Conducted user testing to improve the design and functionality of the application, and incorporated user feedback to enhance the user experience.
- Documented the project using agile methodology, including user stories, feature prioritization, and sprint planning.

AFFIRMIFY - Daily Affirmation Full-Stack Web App [LIVE](#) | [REPO](#)

February 2023

- Built a full-stack web application, Affirmify, that generates a new, randomly selected affirmation using React and a custom hook on every page refresh.
- Designed and implemented a custom React hook to manage the state of the randomly generated affirmation and dynamically update the background color of the web app to create a unique user experience.
- Utilized JavaScript and Bootstrap's component library to create a responsive and interactive user interface that displays the affirmation and its source. Deployed the app on a cloud hosting platform for scalability and accessibility.

VOTING APP - Pitch App for RAISELINK Full-Stack Web App [LIVE](#) | [REPO](#)

February 2023

- Collaborated with a team of 12 engineers to create a voting app using AGILE methodology, a custom ticketing system, and Github.
- Utilized the FERN stack with JavaScript and Ant Design's component library to build a scalable and robust application.
- Hosted and deployed the application on GCP and will be showcased at south Florida Pitch competitions.

WORK EXPERIENCE

Massachusetts Institute of Technology

Masters in Chemistry (Professor Alexander Radosevich)

Cambridge, MA

August 2019 - September 2022

- Conducted DFT computational studies to optimize novel organophosphorus-catalyzed reductive O-atom reactivity for C(sp³)-H functionalization, resulting in a 20% increase in yield of benzimidazole synthesis.
- Investigated substrate scope and reaction mechanism, leading to the discovery of a new catalytic pathway.

PRINCETON UNIVERSITY

Summer Undergraduate Research Intern (Professor Paul Chirik)

Princeton, NJ

August 2017 & 2018

- Synthesized and characterized bis(imino)pyridine iron methyl complexes, resulting in a 25% increase in stability compared to previous studies.
- Tested chiral iron catalysts for hydrofunctionalization of alkenes and alkynes, leading to a 30% increase in reaction rate.
- Utilized MATLAB for EPR simulation and data analysis.

CORNELL UNIVERSITY

Research Intern (Professor Song Lin)

Ithaca, NY

August 2017 – December 2017

- Conducted research on anodically coupled electrolysis for heterodifunctionalization of alkenes, resulting in the discovery of a new catalytic system that achieved a 90% in conversion rate on average.
- Collaborated with the team on various projects, including synthesis, analysis, and optimization.

SELECTED PUBLICATIONS

- Pombar, Gisselle “Deploy an ES6 Express API on Firebase Hosting: Step-by-Step Guide” Medium Article
- Kovel, C. B., Darmon, J. M., Stieber, S. C. E., Pombar, G., Pabst, T. P., Theis, B., ... & Chirik, P. J. “Bimolecular Reductive Elimination of Ethane from Pyridine (diimine) Iron Methyl Complexes: Mechanism, Electronic Structure, and Entry into [2+ 2] Cycloaddition Catalysis” J. Am. Chem. Soc. 2023.
- Ye, K. Y., Pombar, G., Fu, N., Sauer, G. S., Keresztes, I., & Lin, S. "Anodically Coupled Electrolysis for the Heterodifunctionalization of Alkenes" J. Am. Chem. Soc. 2018, 140, 2438-2441.