# Matthew Williams
## Computational Biologist

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## SKILLS

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| *Languages* | Python; R; Jupyter Notebook; Julia; JavaScript; PostgresSQL; Linux |
| *Frameworks* & *Libraries* | Pandas; SciKit-learn; Django; Tensorflow; Pytorch; Matplotlib; SciPy; particles; D3.js; Langchain |
| *Developer Tools* & *Misc.* | Docker; Git; AWS; JMP; Microsoft Excel; Agile project management |

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## TECHNICAL EXPERIENCE

**Lanzatech**                                                                                           Skokie, IL
Artificial Intelligence and Computational Biology Intern                          January 2024 – June 2024

- Executed deep learning cofactor specificity screen of 60k+ sequences, curating <100 enzyme homologs for in-vitro assaying
- Implemented generative AI pipeline to predict protein structure using ESMFold and screen sequences for expression probability, reducing experimental time by months
- Identified target for metabolic pathway optimization using flux balance analysis with a *C. Auto* genome-scale model
- Employed polynomial regression and Bayesian optimization to train metabolic growth model on experimental data

**Bluestem Biosciences**                                                                        Remote (NE)
Full Stack Software Development Intern                                              June 2023 – December 2023

- Developed internal web application with Django and PostgreSQL for processing experimental data and performing modeling
- Created Jupyter Notebooks for bioinformatics projects including sequence alignment, enzyme cofactor prediction, and strain growth modeling, accelerating ad-hoc strain engineering efforts
- Built RAG LLM agent using Langchain to gain insights from internal documents and datasets, expediting grant writing
- Partnered with the commercial team to identify opportunities for commodity chemical bioproduction and compose grant proposals which secured six-figure non-dilutive funding for innovative projects

**HealthPhi** (Health Data Mobile Application)                                              Remote (NJ)
Development Intern                                                                     August 2021 – January 2023

- Strategized UX improvements for agile iOS app development and bug tested prototypes with 15+ beta users
- Presented research on competitor services and market trends in consumer wearable technology at weekly board meetings

**Ortho Clinical Diagnostics**                                                              Raritan, NJ
Bioformulation Scientist II                                                       January 2022 – August 2022

- Formulated components of the Hepatitis B and Hepatitis C ELISA Test System Kit and conducted 4-step in-process testing to validate functionality and safety prior to consumer release
- Eliminated documentation redundancies to improve workflow efficiency by 66% across donor screening teams

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## PROJECTS

**Enzyme By Design —** Provided consulting for pre-clinical stage oncology therapeutic startup; performed competitive analysis and advising on go-to-market strategy

**Anther —** Led Agile development of music clustering application, leveraging D3 to visualize song similarity data in dashboard

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## EDUCATION

**Northwestern University**                                                                  June 2024
Master of Science in Biotechnology; Graduate Minors in Synthetic Biology & Entrepreneurship            GPA: 3.93/4.00

**The University of Chicago**                                                                 June 2020
Bachelor of Arts in Biology with a focus on Molecular Biology

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## LEADERSHIP ACTIVITIES

**Association of Biotechnology Students**                                                   Evanston, IL
Industry and Alumni Relations Chair                                            January 2023 – January 2024

- Created internships for the biotechnology program via career development events with Deloitte and Lanzatech
- Coordinated logistics and found speakers for Biotech Nexus, a networking event with over 50 attendees, including students, faculty, and industry professionals