Logan Reed

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Education

- **To Be Decided** — USA
  PhD in Applied Mathematics; GPA: — *Aug. 2024 –*
- **Rutgers University** — Camden, NJ
  Master of Science in Mathematical Sciences; GPA: 3.96 — *Aug. 2021 – May. 2023*
- **Texas State University** — San Marcos, Texas
  Bachelor of Science in Applied Mathematics / CS; GPA: 3.74 — *Aug. 2017 – May. 2021*

Experience

- **Rutgers University** — Camden, NJ
  Researcher in Computational Biology Lab — *Jan 2022 - Current*
  - **Code Integration**: Translated an existing MatLab codebase to a fully documented python package. Decoupled data from internal code, implementing the usage of generic API calls and extending the potential uses to any metabolic pathway and database of microarray data.
  - **Optimization**: Converted the symbolic matrix representation to a numeric model emphasizing vectorization through numpy. Improved the flux calculations by writing an ODE function which exclusively uses vectorized matrix operations, decreasing average runtime by %5000
  - **Workflows**: Created a standardized programming environment using Tox to automate and standardize testing alongside Poetry to manage packages across the entire team. Implemented a CI/CD pipeline using GitLab.
  - **Data Structures**: Wrote a (potentially) novel representation of *metabolic* graphs, synthesizing recent research on representing hypergraphs and ubergraphs.
  - **Published Research**: Denaro, Christopher et al. "A pipeline for testing drug mechanism of action and combination therapies: From microarray data to simulations via Linear-In-Flux-Expressions: Testing four-drug combinations for tuberculosis treatment." Mathematical biosciences
- **Rutgers University** — Camden, NJ
  Part Time Lecturer — *Aug 2021 - Current*
  - **Instruction**: Lectured classes ranging from 30 to 45 students in Introductory College Algebra. Created lesson plans as well as supplementary materials to aid in student comprehension.
  - **Leadership**: I was fully in charge of all aspects of the course except the standardized final exam. I successfully ran the course, ending with a notably high student satisfaction score.
- **Master's Thesis** — Camden, NJ
  Graduate Student — *Mar 2022 - May 2023*
  - **Optimization Algorithm Design**: Constructed an explicit vector field which allowed the derivative of each vertex to be computed. Designed an algorithm which uses a specific form of gradient descent to optimize the location of each vertex while maintaining a constant area.
  - **Programming**: The codebase is a combination of C for IPC, bash for organizing the parallelization, and python as a wrapper and data processing.
  - **Results**: While not notable enough to be published in a journal, there are multiple instances of novel proofs and results. Computed constants of interest which had never been published.

Projects

- **Personal Server**: Custom built home server that uses Linux and Docker Compose to host various web applications through a reverse proxy. Configured a RAID 5 array. Automatically updates applications and create backups.
- **Competitive Smash Bros Analysis**: Scraped and cleaned match data. Created visualizations of interesting character and player data. Implemented prediction using regression analysis.

Programming Skills

- **Languages**: C, C++, Python, SQL, Java, LaTeX **Technologies**: Excel/LibreOffice, Git, Linux