BRIDGET KNIGHT

Greater Boston Area, MA ● (781) 576-0432 ● bridget.g.knight@gmail.com ● https://bridgetknight.com/

SKILLS

- **Languages:** Python, Java, JavaScript, HTML, CSS, R, SQL, Bash, WDL, C++, Kotlin
- **Tools:** Visual Studio Code, Linux, Git, GitHub, Arduino, Raspberry Pi, FPGA, Docker, Jupyter
- **Cloud Platforms:** Google Cloud Platform, Terra
- **Databases & Libraries:** Jinja, Numpy, Pandas, Keras, React, Node.js, REST, NCBI, PySam, BCFtools
- Public speaking and technical writing

EXPERIENCE

BROAD INSTITUTE OF MIT AND HARVARD (4 years) Cambridge, MA, USA
Software Engineering Intern Jun 2021 - Present
Full-time Dec 2024 - Present; Previously full-time summers, part-time semesters

- Developed cloud-based search interface in Terra (cloud-native bioinformatics analysis platform) for querying and analyzing TB-scale short and long read genomic data, collaborating directly with infectious disease researchers at Harvard School of Public Health (HSPH) and Senegal's International Center for Genomics and Disease Surveillance (CIGASS)
- Led end-to-end development of automated cloud sequencing reports in Terra, incorporating ongoing feedback from ~30 malaria researchers at HSPH and CIGASS to streamline sequencing analysis workflows
- Designed and implemented scalable data visualization interface using R, Python, and SQL, working closely with lab teams to improve analysis of high-throughput genomic data

SALEM STATE UNIVERSITY—IN PARTNERSHIP WITH MIT (1 year) Salem, MA, USA
Research Assistant Sep 2023 – Present

- Developed Jupyter Notebook pipeline for statistical analysis and visualization of pre- and post-test data from 100+ high school physics students, revealing a 50% average score improvement after data-driven instructional changes

EDUCATION

SALEM STATE UNIVERSITY Salem, MA, USA
B.S. in Computer Science, Intelligent Systems. GPA: 3.94/4.0. Summa cum laude. Sep 2020 - Dec 2024

- **Relevant Coursework:** Software Engineering, Machine Learning, Artificial Intelligence, Lab Automation
- **Activities and Societies:** Alpha Lambda Delta, Programming Club (VP), Datathon Club (VP), Commonwealth Honors Program, Upsilon Pi Epsilon

PROJECTS

SPROUTLING Salem, MA, USA
Salem State University Presented Dec 2024

- Designed and built an Arduino-based automated plant watering system at 60% of the cost of market solutions, integrating moisture sensors, voltage regulation, and circuit management for efficient water delivery
- Developed a WiFi-enabled Android application (Kotlin, Jetpack Compose) to remotely control and monitor hardware, ensuring seamless real-time communication between software and embedded systems
- Implemented sensor data processing and automated device control, applying principles of hardware-software integration, embedded systems programming, and IoT development

PUBLICATIONS & PRESENTATIONS

SPROUTLING: Automating Plant Care with Arduino and Android April 2025
Forthcoming at Massachusetts Undergraduate Research Conference

AUTOMATIC SEQUENCING REPORTS - MALARIA Aug 2024
Broad Institute of MIT and Harvard, Harvard School of Public Health

- Presented to leading immunology and infectious diseases researchers on dynamic generation of sequencing reports using Terra and WDL pipelines, highlighting the impact of automation on research efficiency and accessibility

DIGGING IN: Attending to students' epistemic emotions while computationally modeling in physics Jul 2024
American Association of Physics Teachers, doi.org/10.1119/perc.2024.pr.Conlin

BIG DATA ANALYSIS USING PYTHON AND GITHUB Jul 2020, Jul 2021
Key Speaker at Women in Data Science Conference