William Richards

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Eduction

Carleton College - Computer Science Major - 2013-2017

Coursework : Data Structures • Computer Organization and Architecture • Software Design • Programming Language Design • Computability and Complexity • Data Mining I - III • Computational Biology and Medicine • Senior Capstone Seminar • Evolutionary Computing and Artificial Life • Calculus I-III • Linear Algebra • Algorithms • Math of Computer Science • Visualization for Data Science

Skills

C++, Valgrind, CMake, Python, Javascript (ES6), HTML, CSS, Vue, d3, NodeJs, Bash, Linux, AWS, Slurm, Git

Technical Experience

University of Utah Department of Human Genetics - Research Assistant (summer 2016)

Developed genetic data analysis tools for 10x Genomic data

- Used clustering to recover long-range information from barcoded short sequencing reads. (c++)

University of Utah Department of Human Genetics - Research Assistant (summer 2017)

- Implemented neural network to filter contaminating human tissue inside mouse patient derived xenograft models (Python)

University of Utah Department of Human Genetics - Software Developer (August 2017 - March 2019)

- Refactored lab-developed genetic discovery tool, added error checking, debugged memory leaks, developed flexible command line interface, modernized build environment with CMake (c++)
- Wrote tool to find denovo ALU mobile elements, performed analysis on patient data on AWS HPC cluster and verified findings (c++)
- Developed tool to find more denovo mobile elements, translocations, inversions, and large structural insertions/deletions, Performed analysis with this tool and verified results (c++)

University of Utah Department of Human Genetics - Web Developer (April 2019 - Present)

- Pedigree visualization tool with genotype/phenotype regression visualizations
    - Worked with sensitive patient health information, HIPAA compliant, support user upload and integrated with access controlled protected environment data platform (Vue, node.js, d3)
- Developed data quality control visualizations for clinical diagnostic application
    - Worked closely with team members to integrate code into development and production environments, followed version control protocols (Vue, node.js, d3)