Ryan Zurrin

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Education

University of Massachusetts Boston, Boston, MA (Current) **Dec 2023**

Bachelor of Science: Computer Science, GPA: 3.9

Berkshire Community College, Pittsfield, MA **Aug 2021**

Associate of Science: Computer Information Systems / Computer Science GPA: 3.74

- *Certificate in Computer Programming – Technical* **May 2021**

Relevant Coursework

- Programming in Java I & II
- Data Structures with Java
- Physics 113, 114
- Programming in C
- Programming in C++ I & II
- Introduction to Algorithms
- Operating Systems
- Intermediate Computing with Algorithms
- Advanced DS and Algorithms
- Computer Architecture
- Intro. Theory of Computation
- Blockchain Technology
- Digital Circuits
- Ethics in Technology
- Calculus, Discrete Math, Linear Algebra
- Web Design
- IT Essentials
- Introduction Software Engineering

Technical Skills

- **Platforms:** Linux, UNIX, AWS, Windows 3.1 - 11, Raspberry Pi, Arduino
- **Languages:** C++98 – C++20, C99 – C11, Java (SE8 – SE11), Python 3+, R, HTML5, CSS3, JavaScript (ES6+), MATLAB (R2021a+), Bash, Coq, Latex
- **Skills:** Software development/engineering, Object-Oriented Programming, API design, algorithm analysis/design, web development, content management systems (CMS), bash scripting, research, learning new things, communication, organized and very motivated
- **Development Tools:** Visual Studio/Code, JetBrains IDE's, Sublime Text, Jupyter Notebook, Anaconda, Terminal/bash, Vim, MultiSIM, NetBeans, Eclipse, Git, GitHub, working on High-Performance Compute (HPC) clusters, SSH, AWS(EC2, S3).
- **Other Software:** 3DSlicer, FSL, Microsoft Office360 Suite, Google (Sheets, Slides, Docs, Drive, Teachable Machines), Overleaf, Data Robot, GIMP, Autodesk Fusion360, Slack, Teams, Discord

Project Experience

Brigham and Women's Hospital - Psychiatric Neuroimaging Laboratory | Boston, MA

Automated preprocessing and harmonization pipeline of multi-site large-scale neuroimaging data **Aug. 2022 - Current**

- Worked on AWS to harmonize over 2500 subjects across multiple sites, helping to unify dMRI scans, which will give doctors and researchers comparable brain scans, removing possible scanner and device bias that is often prevalent in diffusion data.

University of Massachusetts Boston – MPSYCH Lab | Boston, MA

Developed multi-stage algorithm for detecting outliers in mammograms **Feb. 2022 – Jan. 2024**

- Experimented with multiple algorithms, features, and normalization combinations using unsupervised machine learning in order to find the most accurate means of removing unwanted data.
- Developed a novel 2-stage algorithm for cleaning mammogram data, which was published and presented at the MIDL conference in 2023. The code is open-source and available on GitHub.

Berkshire Community College | Pittsfield, MA

Design and build a website **Sep. 2018 -2021**

- Created a GitHub account to manage personal websites and coding projects.
- Experience using CMS, as well as the ability to build full websites from scratch using HTML, CSS, and JS.

Group Project to design different card games **Apr. 2021**

- Developed a playable card game program using C++, incorporating the use of Abstract Data types and Data Structures.
- Coordinated several games into one menu-based game, allowing users to select the game to play.
- Worked with team using a GitHub repository and maintained close communication throughout the project.

Physics Library in C++, using Object Oriented Design Patterns **Mar. 2020**

- Built multiple class libraries containing static methods for solving complex physics problems.
- Includes custom-built Matrix and Vector classes as well as the use of 3rd party libraries for visualizations.

Work Experience

Brigham and Women's Hospital – Psychiatry Neuroimaging Laboratory **Jan. 2024 – Current**

Bioinformatician I

- My focus will be enhancing collaborative efforts within the research team, aiding in software documentation, and supporting medical researchers in software utilization.
- I will aid in advancing bioinformatics at PNL, where I aim to contribute to innovative research that has real-world implications for understanding the human brain and how it may relate to the development and possible treatment of psychiatric disorders.

Brigham and Women's Hospital – Psychiatry Neuroimaging Laboratory **Aug. 2022 – Dec. 2023**

Undergraduate researcher in the Psychiatry department

- Developed software solutions for automating large-scale neuroimage preprocessing and data standardizing as part of the Human Connectome Project.
- Implemented and tested new software and GPU environments on work servers.
- Daily work includes setting up and testing software that is used by a diverse team of researchers who are exploring the relationship between brain connectivity and possible psychiatric disorders.

University of Massachusetts, Machine Psychology Department Researcher **Feb. 2022 – Present**

Machine Psychology Fellow, Data Science researcher

- Currently working on breast cancer research harnessing the power of machine learning to help clean a large dataset which will eventually become the world's largest open-source mammography database: The Oregon-Massachusetts Mammography Database (OMAMA-DB).
- Developed APIs and streamlined frontend software such as annotation tools, which give users a clean and easy-to-use interface for data explorations and region of interest (ROI) labeling.

Freelance Web Design **Jan. 2020 – 2022**

Website Administrator

- Designed, built, and maintained websites for local businesses.
- Produced a website to allow group members to register and purchase tickets for events and concerts. I integrated Eventbrite into the UI for ticket management and used advanced CMS tools.
- I constructed a tracking and scoring system used in the first annual Great Berkshire Scavenger Hunt.

Norman Rockwell Museum, Stockbridge, MA **Jun. 2021 – Aug. 2021**

Technology Intern

- Coordinated over 40 computers and mobile devices for digital experiences, including inventory and repairs.
- Wired the museum, beta-testing virtual exhibitions and setting up bug-tracking software.
- Set up and break down A/V, 6 laptops, wireless microphones, and lighting equipment for hybrid public/online programs each week.

Berkshire Community College, Pittsfield, MA **Jan. 2018 – Apr. 2020**

IT Assistant | Computer Lab Assistant | STEM mentor | Tutor

- Set up campus computers for over 1000 staff and students and kept systems updated and safe.
- Helped students navigate the school's technology and offered advice and tips.
- Mentored new STEM students and tutored Digital Circuits and IT Essentials class.

Publications

- Outlier Detection for Mammograms **Medical Imaging with Deep Learning 2023**

Awards and Memberships

- UMB Computer Science Club **Fall 2021, Spring 2022**
- CSM Undergraduate Research Fellowship **Fall 2022**
- Poster winner at HPC day at UMass Lowel **September 2022**
- CIS Program Award **Spring 2021**
- Joseph H. Smith Jr. '45 Award **Spring 2021**
- Dean's List – High Honors Awards **Spring 2019, Fall 2019, Spring 2021**
- Robotics Club **Sep. 2018 – Apr. 2020**
- Falconer Award – Fine Arts **Spring 2019**
- Phi Theta Kappa, Communications Officer **Spring, Fall, 2019**