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**JOSHUA A. BROWN****More**

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**Professional Experience**


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**SAS Institute, Data Visualization R&D****Senior Associate Software Developer***2017–Present*

- Built cutting-edge applications and libraries based on WebAssembly for the SAS Viya platform, using TypeScript, JavaScript, and C++
- Led the development of a framework for writing integration tests for the interface layer between JavaScript host code and a WebAssembly-based C++ runtime
- Delivered a new customer-facing application for creating data visualization templates, working on a team of two
- Designed a tool for encapsulating the team's complex karma configuration and distilling it into options specific to the development environment

**MetLife, Inc.****Software Development Engineer II***2017***Software Development Engineer I***2016–2017***Associate Software Development Engineer***2015–2016*

- Developed an enterprise application used by underwriters to renew group benefits insurance products for over 10,000 companies per month
- Re-implemented the application-wide search, reducing end-to-end request time by a factor of 1000
- Led a team of software engineers in building a proof-of-concept for a “next-phase” application built on Spring Boot and Angular; consulted for teams using it as a prototype as it became adopted company-wide
- Pioneered MetLife's use of new technologies such as AngularJS and the Play Framework on an Agile team, taught AngularJS to senior software engineers new to the framework, and was the “go-to” subject matter expert
- Implemented a report automation system, replacing over a dozen manual reports per month

**Technical Associate***2014*

- Re-implemented part of one of MetLife's largest enterprise applications used by over 1300 claims administrators to handle over 800,000 disability claims a year, working on a small, Agile team
- Reduced end-to-end search time by 42% by replacing the outdated user interface with a Single Page Application built on Angular, Spring MVC, and a RESTful back end
- Ranked first for Technical Aptitude among my cohort in the six-month onboarding program

**UNC Department of Physics****Supplemental Instruction Leader***2013–2014*

- Planned and led three Supplemental Instruction sessions per week to teach physics students effective problem solving strategies
- Created a 100-page supplemental textbook to offer alternative explanations for complex topics
- Organized and facilitated group problem-solving sessions for introductory physics students

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**Projects**


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**@josh-brown/vector**

- Built a linear algebra package in TypeScript from the ground up; currently available on NPM
- Implemented matrix and vector operations, eigenvalue algorithms, matrix factorizations, and applications to statistics and differential equations
- Achieved 100% test coverage for functions and 99.5% coverage for lines

**Unicorn CLI**

- Developed a command line interface for interacting with the division's distributed build system
- Replaced a manual process with a developer-friendly, automation-friendly workflow
- Application was adopted across Data Visualization R&D and attracted contributors from throughout the division

**Predicting Mortgage Rates**

- Used data from the Home Mortgage Disclosure Act to build an ensemble model which combines the outputs of a gradient boosting algorithm and a random forest to predict whether a mortgage will be approved
- Designed a flexible, metadata-driven architecture which can easily accommodate new features without a code change.

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## Technical Skills

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**Languages:** TypeScript, JavaScript, Java, C++, Python, BASH, MatLab, LaTeX, HTML, CSS, Sass, SQL  
**Tools:** Git, Maven, Node.js, NPM, Grunt, Gulp, Webpack, Jenkins, Selenium  
**Libraries:** React, Angular, Spring, Hibernate, Pandas, NumPy, Scikit-learn, JUnit, Jest, Mocha, Chai  
**Concepts:** Object-Oriented Programming, Functional Programming, Agile Development  
**Software:** JetBrains IDEs (IntelliJ, CLion, etc.), VS Code, Eclipse, Rally, Phabricator, GitHub, GitLab, TFS, Atlassian tools (BitBucket, JIRA, etc.)

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## Education

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### University of North Carolina at Chapel Hill

*May 2014*

- Chancellor's Carolina Scholarship: full ride scholarship including tuition, room, and board for four years
- B.S. in Applied Mathematics with Highest Distinction; B.A. in Physics; Minor in Music
- UNC-Chapel Hill National Merit Scholarship
- Dean's List of Distinguished Students, Seven Semesters
- Phi Beta Kappa: National Academic Honor Society
- Sigma Pi Sigma: National Physics Honor Society
- GPA 3.8

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## Extracurricular Activities

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### Founder and Music Director, UNC Tarpeggios a cappella group

*2010-2014*

- Established one of the most popular and selective a cappella groups at UNC
- Planned and led over 300 rehearsals, seven full-length concerts with hundreds of attendees, and dozens of other live performances
- Managed the production of a \$10,000.00 professionally-produced studio album
- Wrote original constitution and bylaws, recruited and auditioned members, and established University recognition
- Arranged over 40 songs performed by the group