

Work Experience

Software Engineer | May 2019 – Present

Core BTS | Fort Wayne, Indiana

- Lowered initial page load time of a web application's highest traffic page by more than 400% through optimizing SQL queries, dramatically reducing SQL calls, adding pagination, and introducing caching
- Accelerated the time it takes to run a common manufacturing process by 300% through automating an efficient strategy for creating holes in pieces of metal
- Saved an estimated 250 worker-hours per week by introducing a mechanism to automate the process of manufacturing parts across different physical plant locations
- Championed initiative for improving maintenance costs by abstracting an often changed and mission critical 6000 line class into small, modularized classes in appropriate layers (e.g. UI, data, business logic, etc.)—that are under automated testing
- Devised plan and proof of concept for improving productivity and developer onboarding via migrating a legacy Knockout application to React rodneymcquain.com/blog-posts/integrating-react-into-a-knockout-based-app
- Shortened development feedback loops by minimizing the time it takes to run integration tests from ~2.6 minutes to ~20 seconds and adding the ability to make the tests runnable on previous versions of the software
- Mentor colleagues informally and in a formal mentorship program rodneymcquain.com/blog-posts/interacting-with-the-codebase rodneymcquain.com/blog-posts/creating-code-reviews-that-people-interact-with
- Gave a talk about the importance of understanding the business domain to students at Purdue University Fort Wayne <https://www.linkedin.com/feed/update/urn:li:activity:6859220639400783872/>
- Cultivate shared ownership, minimize ambiguity, and empower teammates to ideate on our processes by organizing periodic working agreement meetings

Projects

NBG Production Control Suite

C#, Blazor, JavaScript, Microsoft SQL Server, Canopy, XUnit

Professional Project for Nucor (Fortune 500 company—the #1 steel producer in the United States) | April 2020 – Present

As a consultant for Core BTS, I build internal web and desktop applications that support the business's needs for detailing, manufacturing, and shipping ~18.6 million tons of parts annually, across their many physical locations. The main efforts focus on automating tedious processes, improving the efficiency of their applications, consolidating their software to support the organization's various acquisitions, and re-architecting existing solutions to improve their reliability and maintainability.

The Digit-Inator

TypeScript, ReactJS, SCSS Modules, Jest, Cypress, Python, Tensorflow

Personal Project | August 2020 – December 2020

The Digit-Inator makes its best guess at what digit a user draws through machine learning.

- Transformed digit-recognition accuracy from ~35% to 99% by compressing a user's drawing to align with the machine learning model's dataset via minimizing stretching, maintaining aspect ratio, correcting color, decreasing drawable space, adding padding around the digit, increasing brush size, and removing noise to support detection for drawings of all sizes
- Reduced effective time until a user can run a detection by ~400% via pre-loading and caching the machine learning model
- Improved confidence in modifying the machine learning model or drawing compression code by writing full end-to-end tests that cover the input of the user's drawing to the output of the detection of the digit

digit-inator.netlify.app | github.com/RodneyMcQuain/Digit-Inator**Melee CSS Color Changer**

Java, JavaFX

Personal Project | May 2019 – July 2019

A desktop application that allows users to customize the colors of the Character Select Screen for Super Smash Bros. Melee in various and vibrant ways. In order to accomplish this, I researched specific sequences of bytes that indicate the offsets of color and transparency values for a given UI element on the character select screen—for more information, take a look at:

rodneymcquain.com/blog-posts/coloring-in-a-20-year-old-video-game | github.com/RodneyMcQuain/Melee-CSS-Color-Changer

Education

Bachelor of Science Degree in Computer Science, Minor in Mathematics

Graduated in May 2021

GPA: 4.0 / 4.0 | Graduated with "Highest Distinction"

Purdue University Fort Wayne | Fort Wayne, Indiana

Skills

C#, JavaScript, TypeScript, Java, Python | ReactJS, GatsbyJS, ASP.NET Core, Blazor | SQL, Microsoft SQL Server | HTML, CSS, SCSS modules | test-driven development, unit testing, integration testing | SOLID principles, Gang of Four design patterns