# Robert “Tye” Riley

Software Engineer | Game Developer | Embedded Systems Engineer


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## RELEVANT SKILLS

ReactJS | NextJS | Vue | ExpressJS | PHP | Mongoose | Linux | Windows | Mac | C | C++ | C# | Xamarin | HTML5 | CSS3 | JavaScript | Bash | Shell | Unity Game Engine | Docker | Git | Python | Anaconda | R | MySQL | NoSQL | Java | Swift | Ruby | Ruby on Rails

- Proficient with Microsoft Office and Adobe Creative Suite
- Certified Associate in Mechanical Design (SolidWorks)

## WORK EXPERIENCE

**UCF WEAR Lab | Orlando, FL** November 2020—December 2022

*Lead Software Engineer*

- Led teams of three junior developers for two projects undertaking the mobile application development process while communicating with corresponding multidisciplinary teams.
- Engineered Unity Game Engine infrastructure by providing skeleton classes for instance-based objects. Then attached those instance-based objects to real-time objects.
- Communicated with hardware co-teams to illustrate the data flow between the microcontrollers and software applications.
- Worked extensively with the NumPy library to perform tests on string vibrations using Fast Fourier Transform to gather data about the frequencies of a vibrating string on a cello.

**Cox Media Group | St. Petersburg, FL** August 2017—July 2018

*Promotional Specialist*

- Organized equipment in the station vehicles and workplace to help orchestrate station attendance at events.
- Collaborated with coworkers and station talents by planning and executing event requisites by promoting the station for corresponding events.
- Documented company appearance at event via photographs and paper records with brief descriptions and summaries.

## WEB DEVELOPMENT

**Exhibit Marker Uniform Resource Router (EMURR) [web/pi]** TypeScript | NextJS | Prisma | MySQL

- Designed and built a WYSIWYG editor website to create websites for embedded systems built on top of the NextJS framework.
- Performed standard DevOps operations to manage Git/GitHub repository workflows by reviewing, merging, and managing branches.
- Organized asynchronous data flow by creating ReactJS/NextJS components to separate hook logic and states for code clarity.
- Developed NextJS backend APIs to communicate with the Prisma ORM to store data in a MySQL database and custom server-side filesystem.
- Setup production environment on the UCF CHDR Linux server.
- Developed bash scripts to setup websites to be hosted on a Raspberry Pi local network, hosted on a TP Link router.
- Communicated and documented project requirements and pipelines by participating in daily standups, weekly sprints, and biweekly sponsor meetings.

**Hand Brain Chess [frontend/backend]** TypeScript | ReactJS | ExpressJS | Mongoose | MongoDB

- Developed a functional CRUD backend using the ExpressJS framework that references a Mongoose ORM to store user data in a MongoDB database.
- Designed a JWT authentication in a ExpressJS backend which stores user permissions and is managed by the middleware interface.
- Designed and developed a chat system on a ReactJS frontend which communicates via Socket.io web-sockets for a real-time emoji chat.
- Setup production environment hosted on a DigitalOcean VM based Linux server using the Nginx web server.

**Student Event Manager [frontend/backend]** TypeScript | JavaScript | VueJS | ExpressJS | Sequelize | MySQL

- Developed a website based on an entity-relationship model to design a VueJS frontend for the ExpressJS backend which uses Sequelize to read and write data to a MySQL database.

**Additional recommendations and repositories provided upon request.**

- Performed standard DevOps operations to manage Git / GitHub repository workflows by reviewing, merging, and managing branches.
- Wrote a clear and concise frontend by managing asynchronous data flow with Axios and the Vuex stores through mutators, callbacks, input validation, and carefully constructed models that match the backend model APIs.
- Designed a JWT authentication in a ExpressJS backend which stores user permissions and is managed by the middleware interface.
- Setup production environment hosted on a DigitalOcean VM based Linux server using the Nginx web server.

**Flee** TypeScript | SolidJS | Firebase

- Developing a website using a SolidJS frontend with scalable, flexible components and hooks.
- Managed authentication states using Fire[base/store] database and Google authentication systems.
- Built and designed custom context provider for SolidJS to support frontend authentication validation.
- Performed standard DevOps operations to manage Git/GitHub repository workflows by reviewing, merging, and managing branches.
- Setup production environment hosted on the Firebase hosting platform.

**Personal Website** TypeScript | VueJS | ThreeJS | Firebase

- Developed a website using a VueJS frontend with custom CSS and ThreeJS animations.
- Manages blog posts with read and write permissions to a Fire[base/store] backend and Google authentication systems.
- Created assets using Dalle-2, Adobe Photoshop CC, and the ThreeJS framework.
- Setup production environment hosted on the Firebase hosting platform.

## GAME DEVELOPMENT

**Bitterblossom** Unity Game Engine | C# | Blender

- Developed and designed a video game from scratch using the Unity Game Engine written in C#.
- Performed standard DevOps operations to manage Git/GitHub repository workflows by reviewing, merging, and managing branches.
- Composed original soundtrack with FL Studio and Loopcloud based on project thematical components and design.
- Created special AI behaviors for idle, attacking and seeking states by using object-oriented inheritance for the control logic, and corresponding animations provided from third-party model asset packs found on the Unity Asset Store.
- Wrote original story components based on initial game pitch.
- Built architecture around *ScriptableObject*s to manage the event system and persist data.
- Generated a unique 3D world for the AI and character to interact in using Gaia and GeNa, third-party procedural world building libraries found on the Unity Asset Store, by importing custom textures, building terrain from noise gathered from the Amazon forest, and populating the world with additional third-party GameObject assets also found on the Unity Asset Store.
- Designed and implemented special attacks, animations, interactions, and sound effects based on player controller inputs by utilizing tools like Blender, the Unity Animator, Adobe Audition CC, third-party assets, and asynchronous event-based architecture.

**Sunflower Chess** Lua | Playdate SDK

- Developed and managed a simple arcade game with a small, experienced developer team in a single week written in Lua and built with the Playdate SDK.
- Orchestrated project management for a tightly scheduled group of developers, designers, and artists by communicating with team members and managing Kanban workflow.
- Performed standard DevOps operations to manage Git/GitHub repository workflows by reviewing, merging, and managing branches.
- Implemented game architecture and logic, by creating respective classes, sprite states, and user story design.

**Discord and Dragons** TypeScript | DiscordJS

- Created asynchronous, non-singleton software architecture from scratch using classes, states, interfaces, and events by utilizing the DiscordJS API and TypeScript language.
- Built a custom rendering method for Discord embeds to refresh player UI using a timer system.
- Utilizes Discord bot, event, modal, input, role, emoji, embed, and button systems to provide users with an interactive Discord game experience.

**5 More Minutes** Lua | Playdate SDK

- Developed a retro-arcade game with a small, experienced developer team written in Lua and built with the Playdate SDK.
- Implemented frame timers and animations for sprite assets and transition logic to control flow of the game controller.

**Mechatronic Musical Instrument: Performance Feedback (MMIPF)** Unity Game Engine | C# | Wwise

- Handled Bluetooth events to display, calculate, and emit sound sent from a microcontroller built on Unity Game Engine and C#.

**Additional recommendations and repositories provided upon request.**

- Managed sound events and states with the Wwise sound engine and edited respective sound frequencies of a cello in FL Studio.
- Created custom assets in Adobe Illustrator and Photoshop CC for the UI.
- Built architecture around *ScriptableObject*s to manage the event system and persist data.
- Managed a small team of software engineers by creating a Kanban workflow and hosting weekly meetings.

## EMBEDDED SYSTEMS DEVELOPMENT | ALGORITHMS

**Traveling Salesman Problem — Approximation** Python

- Conceptualized ideas from theory to algorithm to find the shortest Hamiltonian cycle in a complete graph.
- Evaluated theory by drawing out diagrams and writing rules.
- Wrote, tested, and documented the algorithm in Python based on a discrete mathematical, and graphical theory.

**Kernel** C++

- Wrote a kernel script that performs simple operating system tasks written in C++.
- Managed up to 1000 processes consecutively by managing memory of PIDs and history.
- Encompassed fault tolerance and user error by providing custom error messages and handlers.

**Mechatronic Musical Instrument: Performance Feedback (MMIPF)** Circuit Python | NumPy | Python | Anaconda

- Wrote scripts in Python to read input voltage files from a microcontroller.
- Constructed graphs to formulate graphical and statistical analysis in Anaconda.
- Validated Fast Fourier Transform algorithm with other third-party applications.
- Implemented Fast Fourier Transform and Bluetooth Low Energy communication on a microcontroller using the Circuit Python and NumPy libraries to read real-time input voltage provided from a piezo sensor.

## EDUCATION

**University of Central Florida | Orlando, FL** December 2022
*Bachelor of Science in Computer Science, BS* GPA: 3.762

- T-L.E.A.R.N. alumni of the 2020 cohort
- S.U.R.F. scholar of the 2021 cohort
- Presenter at the Student Scholar Symposium
- Dean's List (x1); President's Honor Roll (x3)

**State College of Florida, Manatee-Sarasota | Bradenton, FL** May 2020
*Associate in Arts, AA* GPA: 3.7

- Dean's List (x2)

## NOTABLE ACHIEVEMENTS

- Presented at the Senior Design Showcase UCF where the top 5% of students showcase their senior design projects.
- Placed top 3 for best research poster in T-L.E.A.R.N. cohort.
- Contributed to *5 More Minutes* which has reached over 1k+ downloads and 12k+ views.

**Additional recommendations and repositories provided upon request.**