

CRYSTAL DURHAM

SOFTWARE DEVELOPER ◇ SYSTEMS & TOOLING

864-504-1631 ◇ dev@cad97.com ◇ linkedin.com/in/cad97/ ◇ resume.cad97.com

PROJECT EXPERIENCE

Open Source Software Contributor — Operational Semantics Team 01/2018–current
Rust Programming Language (rust-lang.org) 10000+ contributors

- Refactored core iteration path, enabling iteration over discontinuous ranges without sacrificing performance
- Identified and prevented miscompilation-causing unsoundness error in core reference counting abstraction
- Eliminated a class of unsound errors enabled by allocation of overly large objects sometimes succeeding
- Collaborated and drove consensus within a fundamentally distributed remote development workflow

Independent Software Developer 05/2023–current

- Developed and maintained open source libraries downloaded over a million times
- Extended the boundaries of what patterns are expressible within safe Rust code
- Studied developer tooling experience and how it impacts developer productivity

Game Developer @ SMU Guildhall — Builds, Performance, Architecture, Camera, Tools 08/2020–05/2023

- Worked in a fast-paced, work-equivalent environment using agile scrum to develop and publish multiple games
- Maintained build automation (continuous integration) and Steam deployment integration (continuous deployment), enabling continuous playtesting and reliability testing of the current build by less technical parties

◇ *Conjury Revell* (UE4/C++, Windows; published on Steam) 6 months, 27 developers

- Designed and implemented aspect-ratio independent scalable menu and HUD
- Implemented the save persistence system across multiple usage-driven iterations

◇ *Kibbi Keeper* (UE4/C++, Windows; published on Steam) 6 months, 15 developers

- Troubleshoot, diagnosed, and resolved a critical C++ engine crash issue only reproducible in production builds
- Led results oriented performance work achieving the target PCVR framerate of over 100 FPS
- Created a system harmonizing musical sound effects with the background music's chord progression

◇ *Snowpainters* (UE4/Blueprint, Windows; published on Steam) 3 months, 40 developers

- Extended existing level creation tools, documenting and tailoring it for our level design team's specific desires
- Recorded and analyzed telemetry from playtests, enabling AI team to identify and prioritize problem cases
- Integrated and debugged varied functionality from multiple subteams operating independently

◇ *Gravity Calamity* (Unity/C#, Android; published internally) 2 months, 6 developers

- Navigated with a small, inexperienced team through the self-driven game development process
- Prioritized, distributed, and coordinated workload between two programmers with vastly different skillsets
- Shipped a complete experience in the face of complications from a very limited development timeline

◇ *Guildhall Student Engine* (C++, DirectX 11, Windows) 6 semesters, independent project

- Incrementally developed and maintained a custom C++ game engine from scratch over a period of three years
- Developed six small games in a variety of genres and graphical styles demonstrating technical mastery
- Created a medium-high-level deferred rendering API with a focus on pixel-precise shadows for 2D pixel art
- Refined my prioritization and time management skills to meet stakeholder set milestone timelines

TECHNOLOGIES

Programming Languages	C++, Rust, Unreal Blueprint, C#, Python, Kotlin, TypeScript, JavaScript
Programming Tools	Visual Studio, Visual Studio Code, IntelliJ IDEA, Git, Perforce
Commercial Engines	Unreal Engine 4, Unreal Engine 5, Unity
Project Management	GitHub, Jira, Monday, Trello, Bitbucket
Notable Technologies	DirectX 11, WebGPU, Unreal UMG, Unreal GMS
Other Familiarity	API Testing, Full Stack, Angular, React, Mentoring, Continuing Self-Education

EDUCATION

Professional Certificate in Digital Game Development, SMU Guildhall 08/2020–05/2023

Bachelor of Computer Science, Furman University 08/2015–12/2019