

YUSUF BHAM

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Technical Skills

Languages: Python, Java, C, C++, C#, Haskell, F#, OCaml, Rust, Zig, Coq, JavaScript, Bash, Dafny, x64

Technologies: Linux, IDA, Git, ILSpy, Avalonia, .NET, mtl, Win32, RxUI, React, Github Actions, Docker, LLVM

Projects

zig.SteamManifestPatcher | *zig, Win32* **Sept. 2020 - Apr. 2022**

- Worked on a runtime patcher for Steam to re-enable “downpatching” which was used by several game communities (Hollow Knight, Beat Saver)
- Dynamically finds code to patch by finding references to located constant data
- 100k+ downloads

Hollow Knight Modding API | *C#, MonoMod, ILSpy, .NET 3.5* **Dec. 2017 – Current**

- Active maintainer of an injected modding API for the game Hollow Knight with over 2.2 million downloads
- Managing collaboration with a multitude of people and handling issues
- Implemented continuous integration and deployment to automatically check pull requests and automatically release with artifacts when commits are tagged
- Uses a variety of IL manipulation techniques to improve moddability of the game via rewrites and allow for faster access to reflection APIs by emitting accessors

Scarab | *C#, .NET 6, Avalonia* **Feb. 2020 – Current**

- Created an application with over 1M downloads to install, manage, and automatically update Hollow Knight mods
- Used Avalonia and .NET 6 to enable cross-platform support
- Extensive use of the MVVM pattern and dependency injection for testability
- Continuous integration and auto deployment for automatic releases from tags

zbl | *Zig, UEFI*

- Wrote a UEFI boot manager with support for chain loading and auto-detection
- Auto-detection is able to find and load other EFI applications
- Allows for auto-detection of Linux kernels and respective filesystems
- Can configure custom kernel command-line arguments
- Resulted in contributions back to zig’s stdlib

Runic | *Haskell, mtl, LLVM*

- Designed and developed a WIP functional language with an LLVM backend
- mtl based stack
- Implemented a simple static type system

Education

University of Maryland **Aug. 2021 – May 2024**
Bachelor of Science in Computer Science and Mathematics, Dean’s List, 3.83 *College Park, Maryland*

Thomas Jefferson High School of Science and Technology **Sept. 2017 – June 2021**
Alexandria, Virginia

Experience

Teacher’s Assistant for CMSC433 **Jan. 2023 – May 2023**
Worked on course instruction and creation of a property-based autograder for Haskell *University of Maryland*

Teacher’s Assistant for CMSC433 **Jan. 2024 – May 2024**
Assisted in teaching for a class teaching Dafny and Haskell *University of Maryland*

Relevant Coursework

- Artificial Intelligence
- Computer Vision
- Parallel Computing
- Machine Learning
- Data Structures and Algorithms
- Computer Architecture
- Advanced Functional Programming
- Program Analysis and Understanding