Jack Burkhardt

mail@jackburkhardt.com | 312-478-9592 | Portfolio | GitHub

Game developer and modder with an affinity for tools and game systems. Excellent communication skills which have solved problems across disciplines and team sizes. Proficient with Unity (across engine, editor, gameplay), C++, C# and .NET, reverse engineering, and production duties. Eager to learn new skills and technologies.

Experience

Software Engineer (Contract), SimCase | Remote, USA Feb 2024 –

- Built a Web game for managerial students integrating visual novel, job simulator, and roleplaying systems using an event-driven state machine in Unity/C# and socket networking in JavaScript
- Empowered designers with Unity Editor tools to detect softlocks in dialogue trees and provide a birds-eye-view of content distribution
- Created templating tools for an off-the-shelf dialogue system that reduced tedium, human error, and lowered dialogue setup time from $\tilde{5}$ min to 30 sec
- Adapted a business case study into a branching narrative, which was lauded by students and instructors for its engagement relative to competing products

Software Programmer & Analyst, Baylor College of Medicine – Houston, TX Aug 2024 – Dec 2025

- Built a billing monitoring system and dashboard using ASP.NET Core and MySQL which identified and rescued $47K/month in unclaimed revenue
- Developed ticket tracking system for iLab using C# WPF to provide insight on problem areas and reduce mean ticket closure times from $\tilde{3}$ days to $\tilde{2}6$ hours
- Upgraded legacy systems without upending existing workflows by working directly with users to identify requirements
- Replaced outdated documentation for end-users using the Diátaxis approach, including videos and training sessions that increased user self-reliance
- Administered institution-wide research systems and engaged with 3rd party vendors to design and implement improvements based on user feedback

Flight Simulator QA Programming Intern, NASA | Wallops Island, VA Jun 2023 – Aug 2023

- Validated a flight simulator and safety analysis tool through unit tests, numerical analysis, and runs against previous mission data
- Identified 11 sources of incorrectness & instability with little guidance using industry standard tools GDB and Valgrind
- Rapidly learned and built upon a 20 year old and 15k line C++ codebase by drawing program flow, debugging, and writing docs
- Listened to needs of stakeholder offices, implemented new features, then provided user training and documentation

Lead Systems Engineer, Overture Games | Chicago, IL Jun 2022 – Oct 2023

- Shipped music practice game Intervallic built on Unity and C# which reduces burnout among young music students
- Drafted technical design docs with diagrams, testing plans, scope contingency plans, then sought feedback from team
- Created a level editor mode utilizing polymorphism and factory methods to enable internal & user generated content
- Built a metrics system which sends data to a REST API and NoSQL database on AWS, providing insight on player engagement that impacts business direction
- Implemented shaders, particle systems, animations, UI, and other common visual effects and gameplay elements

Producer, Mayfest Productions | Evanston, IL Sep 2021 – Jun 2024

- Planned and executed annual Dillo Day music festival with 12,000+ attendees, 100+ crew members, and 14 artists
- Oversaw the work of vendors, other crew members, and resolved occasional crises to keep the festival on time
- Engaged in contract negotiations with talent agencies and vendors to ensure quality service and satisfy logistical constraints
- Documented each year's lessons and created actionable steps to improve the attendee experience and crew safety

Mods

Don't Call Abigail (*Disco Elysium*) In Production

- Leading programming team for a DLC-size mod with ~30 total active volunteers
- Completely revised onboarding process and task workflow for new devs, reducing attrition rates from 67% to 20%
- Reverse engineered core gamesystems including level loading, dialogue, character creation, and UI, and exposed them via DiscoAPI
- Worked extensively within Unity IL2CPP runtime and .NET CoreCLR to inject IL and DLLs into the game runtime for tools and to modify game behavior
- Created AssetParasite which stores asset references between retail Unity games and mod AssetBundles to avoid distribution of copyrighted content. Exposes an API to re-link mod and vanilla assets at runtime.
- Constantly collaborated with writing, art teams to identify pain points and develop tools and docs to address them

ObsidianKnapper GitHub

- Standalone tool for reverse-engineering, dumping, and modding Obsidian Entertainment narrative content
- Well defined model-view-controller architecture allows for supporting 4 games across 3 engines, built in .NET WPF
- Uses node graph interface for visualization of questlines and conversations

NUMC (*Minecraft*) Blog Post

- Developed and hosted a custom server played by over 250 Northwestern students from 2020-2023
- Wrote Java plugins providing moderator tools, overhauled world generation, and threaded chunk preloading
- Learned about community management, conflict resolution, Linux administration, and JVM optimization

Skills

Programming: C#, C++, Java, Python, SQL, JavaScript, HTML, CSS, Lua, GLSL/HLSL
Technologies: Unity3D/2D, Unreal Engine, .NET WPF, AWS, Jenkins, FMOD, Blender, Linux
Productivity: Git, Perforce (user & admin), Microsoft Office, Jira, Agile/Scrum, Trello, Confluence, Technical Writing
Adobe Software (as hobbyist): Premiere Pro, Photoshop, InDesign, After Effects, Lightroom

Education

Northwestern University | MS in Computer Science June 2024

- GPA: 4.0/4.0
- Thesis Project: Created a REPL for Step, a HTN planner intended for use in Unity games

Northwestern University | BA in Computer Science June 2024

- GPA: 3.65/4.0
- Relevant Coursework: Operating Systems; IP Networking; Wireless for IoT/Embedded; Linear Algebra; Cybersecurity; Communicating CS; Scalable Software Architecture; 3D Animation; Ethics in Computing; WebGL Graphics; Rapid Prototyping