Francisco Zacarias

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About me

Passionate about low level programming, engines, graphics and optimizations. I have a problem-solving mentality, wide range of technical skills and the ability to tackle complex and abstract problems. I have professional experience in low level systems, research & development and tools programming for game development.

Experience

Tools Programmer at Toadman Interactive November.2023 – Present.

Toadman is an international game developer company for PC and consoles. *Berlin, Germany*

- Developed a Python server-side application integrating multiple tools and services for the studio, centralized for quick access by any developer on Slack. Integrated automated notifications for Jenkins builds, Perforce commits, Unreal Engine bug and crash reports.
- Created a bug report tool in Unreal Engine allowing developers to submit reports by pressing a button. Reports included reporter's Perforce user, a screenshot, current level, coordinates, and optional description. Included functionality to generate Jira tickets with all previous information appended from the bug report interface.
- Developed a custom crash report system forwarding Unreal Engine crashes to our backend. Logged crashes on Slack with reporter's Perforce user, call stack, code snippet, and debugging files (minidump and PDB). Required in-depth knowledge of Windows crash handling and file formats (.uecrash, minidump, PDB). Delivered a company-wide presentation on application crashes and how our system works.
- Integrated ImGui into Unreal Engine, providing examples for quick debug UI implementation. Created a generic debug UI reflecting marked objects in the scene by editing the engine's reflection system to accept custom flags for UPROPERTIES and UFUNCTIONS.

Software Engineer at Beyond Vision August.2021 – November.2023.

Beyond Vision is a R&D startup drone developer and manufacturer *Lisbon, Portugal*

- Implemented several micro controllers applications, in C. These included a redundant data logging system for a drone's electrical system and flight data, firmware for the motherboard's core routines, firmware for the drone's retracting gear and a fast MAVLink protocol message packing and parsing for reliable communication between drones and ground stations.
- Linux kernel driver implementation and debugging to integrate with our own hardware platforms.
- Development in ROS (Robotics Operating System) C++ and Python. Worked on real-time applications for hardware sensors during live flights, real-time data acquisition and processing.
- Drone technology stack (Mavlink, Ardupilot, PX4, QGroundControl, MissionPlanner), Web development (frontend, backend), Databases (SQL), Android Development (Java, ReactNative), Multimedia application (Janus, GStreamer) and R&D.

Personal Projects

Graphics Application — C, OpenGL, Linear Math, GLSL | Github Repository - noname

- Program made in C and OpenGL from scratch, with minimal dependencies and a custom core library where I implemented all linear math, custom memory allocator, file I/O and strings. Requires only a build.bat file and uses a unity build. Click here for video showcase
- Features include mouse picking, bulk selection, add and delete objects, translation gizmo, shader hotloading, hotloading variables from a text file, text rendering, anti aliasing, saving the state of the program to disk.

Algorithm Visualizer - Algorithm-Visualizer-JavaFX | Github Repository

- Interactive GUI application tool to visualize path-finding and maze generation algorithms in a 2D grid.

Technical Skills

Languages: C, C++, Python
Tools: Windows, Linux, Git, VisualStudio/RemedyBG, Linear Math
Interests: Systems engineering. Computer graphics (OpenGL). Game engines. Performance oriented development.