Alfred Jijo

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PROFESSIONAL SUMMARY

Software Engineering student with strong foundation in systems programming, embedded development, and algorithm design. Experienced in designing and implementing robust C/C++ applications with focus on performance optimization, memory management, and low level system integration. Proven ability to lead technical teams, mentor developers, and deliver production ready software tools. Skilled in data structures, debugging, testing methodologies, and cross platform development on Linux and Windows. Seeking opportunities to contribute to high impact software engineering projects and grow expertise in scalable systems design.

TECHNICAL SKILLS

Languages: C (C99, C11), C++, Python, Java, SQL, PHP, Go

Core Concepts: Data structures (lists, trees, graphs, hash tables), algorithms (sorting, searching, graph algorithms), complexity analysis, memory management, concurrency, multithreading, synchronization, debugging, optimization

Tools & Platforms: Git, MySQL, CMake, Make, Linux, Windows, Win32 API, GDB, Valgrind, JUnit, shell scripting

Hardware & Embedded: Raspberry Pi, Arduino, PiCamera, serial communications, hardware interfacing

Methodologies: Agile development, version control, test driven development

LEADERSHIP & TEAM EXPERIENCE

Software Engineering Team (SET) – Co-Lead　　　　　　　　　　Liverpool John Moores University
Project Hyperion – Automated Sky Monitoring System　　　　　　　　　　　　Oct 2025 – Present

- Co-leading a 18-person team across hardware and software engineering, coordinating design, development, and deployment of automated celestial tracking system.
- Architected and implemented closed loop feedback algorithms in C++ for real time device positioning and calibration, achieving target tracking accuracy through algorithmic refinement and debugging.
- Integrated Raspberry Pi hardware with Pi Camera modules and remote server communications, demonstrating cross platform Linux/embedded development expertise.
- Conducted system testing, hardware software integration, and field calibration; troubleshot and resolved complex system failures under deadline pressure.
- Mentored team members on software engineering best practices, code organization, debugging techniques, and documentation standards.

PROJECTS

ASMR-Lang – Compiler & Interpreter Design　　　　　　　　　　　　　　HackNotts '25
Systems Programming, Language Implementation　　　　　　　　　　　　　GitHub | Devpost

- Co-designed and prototyped an assembly inspired programming language mapping operations to generative audio with real time feedback loops.
- Applied compiler theory and interpreter design patterns, implementing lexical analysis, parsing, and bytecode generation under time constraints.
- Demonstrated problem solving, rapid prototyping, and collaborative software development via Git in a competitive engineering environment.

ccDB – C99 Build System & Project Template   Personal Project
Build Automation, Systems Architecture   Codeberg

- Architected a modular C99 development scaffold with self bootstrapping build system (mate.h), eliminating complex Makefile and CMake dependencies for rapid project initialization.
- Engineered reusable cross platform logging and utility modules supporting Windows (MSVC) and Linux (GCC/Clang) compilation with consistent binary output.
- Demonstrated systems thinking by reducing boilerplate and improving developer productivity for C projects.

warden.h – Memory Allocator Library   Personal Project
Systems Programming, Performance Optimization, Data Structures   Codeberg

- Designed a single header, C99 library providing region based memory management with linear arena allocator achieving O(1) allocation performance.
- Engineered polymorphic allocator interface using type safe macros, reducing void pointer casting errors and improving code safety.
- Implemented custom memory alignment logic and support for dependency injection, enabling reusable component for embedded/resource constrained systems.

csview.h – CSV Parsing Library   Personal Project
C, Data Processing, String Parsing   GitHub

- Implemented a zero copy CSV parsing library handling large datasets with minimal memory overhead and robust error handling.
- Optimized for performance using efficient string tokenization and buffer management; validated correctness through comprehensive test cases.

Maths Interpreter – Expression Evaluator   Personal Project
Python, Parsing, Algorithms   GitHub

- Built an interpreter for mathematical expressions, implementing recursive descent parsing and operator precedence handling.
- Demonstrated understanding of compiler/interpreter design fundamentals and problem decomposition.

Hotel Room Tax System   University Coursework
Java, OOP, Software Design   Score: 93% (First-Class)

- Designed and implemented a Java console application managing hotel bookings with tax calculations and data persistence.
- Demonstrated strong object oriented design principles, exception handling, and testing methodology.

UK Road Performance Data System   University Group Project
Java, Agile, Collaboration, Data Management   Score: 73% (First-Class)

- Contributed to a multi person team building a Java application for analyzing transportation datasets and generating performance metrics.
- Participated in Agile sprint cycles, code review, and collaborative problem solving with peers.

EDUCATION

Liverpool John Moores University   Liverpool, England
BSc (Hons) Software Engineering   Expected: June 2028

Key modules: Data Structures & Algorithms, Database Systems, Software Engineering Fundamentals.

Cronton Sixth Form College   Widnes, England
A-Level: Computer Science, Mathematics, Physics   Graduated: June 2024

Relevant modules: Data Structures & Algorithms, Computing Systems, Databases & SQL.