

Jason Dominguez

07539570493 | jasonjdominguez99@gmail.com | [LinkedIn](#) | [GitHub](#)

EDUCATION

University of Manchester <i>Completed 1st year of Comp Sci. PhD in Generative Deep Learning</i>	Manchester, UK <i>Sep. 2021 – Mar. 2023</i>
University of Manchester <i>1st class MPhys in Physics (82%)</i>	Manchester, UK <i>Sep. 2017 – June 2021</i>
Thomas Hardy Sixth Form <i>A levels: Maths (A*), Physics (A*), Music Tech (A), AS Further Maths (A)</i>	Dorchester, UK <i>Sep. 2015 – June 2017</i>

TECHNICAL SKILLS

Languages: C/C++ (7+ years), QML, Javascript, Python
Softwares & Frameworks: CMake, Qt, Git/GitHub, Qt Creator, VS Code

EXPERIENCE

C++ Software Developer <i>Vochlea Music</i>	Nov. 2023 – Current <i>Remote/London, UK</i>
---	---

Company & Product Overview:

Vochlea is an innovative ML-centric music tech startup developing dubnote, an iOS audio analysis app. As part of a 3-person development team, I work with a QML/Qt/C++ tech stack with Objective-C++ for iOS API bridging, advancing the app from prototype to production-ready status.

Core C++ Development & Performance Engineering:

Specializing in performance-critical backend systems, I deliver ~60% of team throughput focusing on low-level optimizations, memory management, and concurrent programming. My work centers on the core C++ engine that powers real-time audio processing and ML inference pipelines.

Key Technical Achievements:

- **Memory Optimization:** Eliminated 200MB memory leaks by implementing RAII principles and smart pointer patterns in performance-critical C++ code
- **Concurrency Engineering:** Resolved critical data races by implementing proper data isolation between threads, using copy and move semantics to eliminate shared memory access
- **Performance Tuning:** Identified and resolved 2-second UI freezes through performance profiling, moving blocking file I/O to background threads with asynchronous callbacks
- **Real-time Systems:** Implemented lock-free queue solution for low-latency audio processing pipelines with deterministic performance characteristics for ML model inference

Technical Summary:

- Implemented high-performance C++ backend systems for real-time audio processing
- Optimized memory usage and eliminated race conditions in concurrent, performance-critical code
- Applied advanced C++ techniques including RAII, move semantics, and async programming
- Developed unit testing suite using QTest framework
- Profiled and optimized system performance using native tooling on macOS/Unix platforms

Associate C++/Qt Software Developer

Carallon

Apr. 2023 – Nov. 2023

London, UK

Company & Product Overview:

Carallon is a lighting systems company. Their products include hardware used in theatres & theme parks, incl. Disneyland, to control lighting setups, as well as desktop apps used for creating presets & scheduling of lighting systems.

Whilst at Carallon I was responsible for bug-fixing in both Windows desktop app code & firmware for the lighting systems devices, using a Qt/C++ stack.

Summary:

- Development & bug-fixing using **Visual Studio** for **Windows** desktop apps and firmware
- Problem solving with the UI (**Qt**), backend logic and networking between devices (TCP/IP, Lon)
- Used **Git** for version control and Jira for workflow management

Programming In My Degree

University of Manchester

Sep. 2017 – June 2021

Manchester, UK

- 4th year: Object-Oriented Programming in C++ (96%)
- 4th year: Machine Learning (ML) and Optimization (91%)

PROJECTS

Options Pricing | C++, Options Pricing, BSM, Binomial

2024 - Current

- Currently working on implementing pricing methods for different financial options, furthering my understanding of financial derivatives pricing. Available [HERE](#)
- Understanding of American, European & exotic put/call options
- Understood & implemented BSM and Binomial models for pricing

Award-Winning Publication in ML for Liquid Crystals | Python, TensorFlow

2020 - 2023

- Applied ML computer vision to identify different liquid crystal phases from their textures
- Published three co-authored papers in top-tier soft matter physics journals. Available [HERE](#)
- One of these publications was the winner of [The 2023 Luckhurst-Samulski Prize](#)

HOBBIES

Music | Drums, Guitar, Vocals, original compositions

- I play musical instruments including: drums, guitar, bass, Canarian timple
- I've written music which has been professionally recorded, available [HERE](#)