

# IONUȚ CAVA

Bristol, U.K

Nationality: Romanian; British citizen

## Experience and skills

### Programming experience:

C/C++ (03/11/14/17)	Commercial experience since 2013 Independent work since 2007
C# (.NET4, Unity)	2+ years commercial (3 years academic)
PHP + SQL + HTML4.x w/ JavaScript & XML	Mix of academic and commercial
Java, VB (6, .NET), ASM, LiSP, LUA, Python	Mix of academic and commercial

### Technologies and work environments:

- **C++11/14/17 experience**
  - Game programming focus: **multithreading** (std::thread/std::async) + **lockless** programming (std::atomic), **compute** based scene processing (e.g. culling)
  - Some Unreal engine experience
  - VS Code, vcpkg, gcc, clang
- **MS Visual Studio** 20xy (main development environment, experience starting from ver. 2005)
- **Linux** (6+ years commercial with Debian, Fedora and Ubuntu distributions).
- **CMake** build system basics (using Cmake-GUI).
- **Revision control** (Subversion, Git and Mercurial)

### Analytical and software development skills:

- As a MSc of Computer Science, I spent most of my study time programming highly specialized applications focused on simulating virtual environments as efficiently as possible, parallelization and efficient usage of hardware (GPUs, CPU's L2 cache, etc) being crucial in achieving that goal.
- Able to quickly adapt to new technologies (C#, Java, PHP, Python, Lua, Perl, Unity, Unreal Engine, etc.). This proved to be a valuable skill at each new workplace as it allowed me to work with new support tools and build systems with minimal training.
- Studying for my MSc degree, I developed my own virtual environment framework that I would later adapt for every specific course my studies implied. It covers A.I. (GOAP based with A\* pathfinding), SIMD math library, command-based rendering with multithreaded command generation, physics, networking, multi-modal input and sound processing. Because it was used as inspiration for other projects by students, both Romanian and international, the framework became an open-source project under the MIT license and code has been partially used in a couple of commercial products.
- Worked on multiple software products from design to delivery (both games and embedded software)

### Other skills and competencies:

- Member of a small, 4-man, indie development team creating 3D software. (Divide-Studio)
- Member of a young students in Informatics team between 2001- 2003 and a local Judo club 2002 – 2006, heavily reliant on members' team play and cooperation.
- Worked in a 5-man construction team on a personal building project.

## Studies and Qualifications

**2010 - 2012:**           **“Ovidius” University, Constanța, Romania,**  
**MSc: Multi-modal distributed virtual environments**

- **Subjects covered:** Augmented and Virtual Environments, Applied A.I., Distributed Algorithms, Automatic Processing of Natural Languages, Advanced Image Analysis and Reconstruction
- **Dissertation:** Simulating a military strategy in an agent-based virtual environment.
  - (Video publicly available on my LinkedIn profile, under degrees)

**2007 – 2010:**           **“Ovidius” University, Constanța, Romania,**  
**BSc: Computer Science and Applied Mathematics**

- **Subjects covered:** Design Patterns, Algorithms & Optimisation Techniques, Networking, CAD, Security, DBS, Computational Geometry, most fields of mathematics (multiple courses in Geometry, Calculus and Algebra).
- **Bachelor thesis:** Dynamically generated and animated vegetation in a virtual environment.
  - (Video publicly available on my LinkedIn profile, under degrees)

## Employment History

**2020 - Present: C++ Cloud Engineer at Hewlett Packard Enterprise**

<https://www.hpe.com>

- Deduplication technology for HPE's StoreOnce product.
- Highly scalable technology running on multiple servers handling petabytes of data.
- Linux-based development & Jenkins-based CI
- C++(11/14/17) with a dash of Python

**2019 -2020: C++ Game Developer at Lo-Fi Games Ltd**

<lofigames.com>

- Kenshi 1: C++ game programming on a custom, heavily threaded, Ogre based engine.
  - Designing, developing, testing and implementing systems, engines, tools and game code.
- Kenshi 2: Unreal Engine (C++ & Blueprints)
  - Focus is on porting most of the old code based into the Unreal Engine
- Reason for leaving: Port to Unreal led to little to no C++ work remaining.

**2017 – 2019 (redundancy): Game Developer at Reach Robotics**

<reachrobotics.com>

- C# Game Development
  - Multiple game modes (Simulation, Sandbox AR, MekaDraw, 4 player battle mode, etc.)
  - Enemy AI (Simulation, AR Battle)
- Unity Development (Mobile & Desktop)
- Reason for leaving: company filed for administration

**2014 – 2017: C++ Developer at Cabot Communications**[cabot.co.uk](http://cabot.co.uk)

- Embedded software development for Smart TVs and Set-Top-Boxes in C & C++(03)
  - High performance, multi-threaded media streaming/decoding/encoding
- Development of a custom implementation of Android TV

**2013 – 2014: Game Programmer at Gameloft S.A., Bucharest Studio**[gameloft.com](http://gameloft.com)

- Brothers in Arms 3 (cancelled project):
  - C++ and JNI development for Android.
  - Bugfixes for the GLES backend for specific Android devices.
- Captain America 2 (credited):
  - C++ game development
  - UI scripting in LUA writing my own C++ hooks
  - Stat system balancing in LUA
  - LUA programming was heavily coroutine based

**Off-hours since 2010: Independent C++ Programmer at Divide Studio**[divide-studio.com](http://divide-studio.com) , [github.com/IonutCava/Divide-Framework](http://github.com/IonutCava/Divide-Framework)

- Developing an open-source, virtual environment development framework in C++
- Multithreaded command buffer generation (a la Vulkan/DX12)
  - GitHub: *Source Code/Platform/Video/Headers/Commands.h*
- Custom threadpool implementation with minimal overhead
  - GitHub: *Source Code/Platform/Threading/ThreadPool.cpp*
- SIMD math library
  - GitHub: *Source Code/Core/Math/Headers/Math{Matrices, Vectors}.inl*
- Cross platform code
- AZDO rendering (threaded buffer updates, threadsafe DMA transfers to GPU memory, manual buffer memory management (reads/writes), precise sync/fence usage and lock management, image load/store, compute based culling, etc)

*Other, shorter roles left out, but listed on LinkedIn (link available in the header of this document)*

**Additional Information****Language ability:**

- Native Romanian speaker
- Proficient in English
- Beginner in Spanish and French.

**Miscellaneous information:**

- British Citizen
- Studied electronics for 4 years and computer science for 2 as extracurricular activities during high school.
- Ionut is pronounced "Yo-noots" and is the diminutive of John (Ion) (the English equivalent being Johnny)