Erwan **Duhamel**

Software Engineer, Graphics Developer, Freelancer, Ph. D

About me

Roughly half a decade of experience with C++ software development, I am proficient with C++11 to C++23. I have a PhD in Computer Graphics, specialised in real-time direct volume rendering for medical data visualisation. I have been maintaining most of the GPU-related facilities in the codebases I have worked on, including both graphics paths and parallel computing paths (CUDA). Accustomed to modern software development, Agile and Kanban methodologies, I enjoy working with a team and join efforts on large-scale projects. On my free time, I develop fubuki, an open-source C++23 framework for Vulkan and low-level graphics.

Personal

Erwan Duhamel
Nationality: French
07/07/1998 (27 years old)

Areas of specialization

Computer graphics • C++ • Real-time graphics • Image processing • Parallel computing

Technical center of interest

`Real-time graphics / Vulkan`
`Direct Volume Rendering`
`Modern C++`

I'm passionate about modern low-level real-time graphics and advances in recent C++ Standards, which I follow closely. On my spare time, I'm a cat lover interested in cooking.

Interests

`Dedicated cat-person`
`Japanese culture & language`
`Cooking`
`Gaming / Retro-Gaming`

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Short Resumé

2025 **Freelancing**
Independent Developer · Strasbourg, France

2021–2024 **IRCAD France**
Researcher, Ph. D curriculum · Strasbourg, France

2019–2020 **Chauvin Arnoux GmBH**
Undergraduate Developer · Sundheim, Germany

Degrees

2024 **Doctoral Thesis / Ph. D**
Ph. D • University of Strasbourg, France
C++, CUDA, GLSL, Real-time graphics, volume rendering

2021 **Electrical engineering**
Master degree • INSA Strasbourg, France
C++, C, Embdedded systems, Bare-metal programming

2021 **Robotics and automatics**
Master Degree • Telecom Physique Strasbourg, France,
C++, Real-time safety-critical systems, Multi-task systems

2019 **Electrical engineering**
Bachelor of Engineering • Strasbourg, France

Programming

- C++
- CUDA
- GLSL
- CMake
- Python

Tools

NSight tools · Git/Lab/Hub · LaTeX · clang tools · valgrind · Md

Frameworks & APIs

Vulkan · glslang · glm · Wayland · Qt · boost · gtest · X11

Curriculum

2025 **Freelancing**
Independent Developper · Strasbourg, France
Maintenance of existing code, integration, etc.
Development of fubuki, open-source idiomatic C++23 cross-platform composable abstraction framework for Vulkan and low-level graphics.

2021–2024 **IRCAD France**
Researcher, Ph. D Curriculum · Strasbourg, France
Company-hosted Ph. D Thesis.
Research topic: Interactive Visualization of 3D Echography Images with Volume Rendering. Developement and integration in the company framework of a new method of direct volume rendering for ultrasound data, and various data-sensitive processing. The work is integrated in the internal framework and in use in several applications actively developped.

2019–2020 **Chauvin Arnoux GmbH**
Undergraduate Developper · Sundheim, Germany
Software development for the technical support service.
Integration with internal platforms and hardware to homogenise the calibration and follow-up process of products sold by the company.

Certificates & Grants

2019 TOEIC (965/990 points)

Languages

French	C2	Mother tongue
English	C1	● ● ● ○
Japanese	C1	● ● ● ○
German	A2	● ○ ○ ○

Publications

2025 *<Embargoed publication>*

2024 *Expressive Direct Volume Rendering for medical image visualisation: application to ultrasound imaging (PhD Thesis)*

2022 *Ray-casted surfaces for expressive direct volume rendering of volumetric ultrasound data*, JFIG 2022.