



David Joffe

BSc Computer Science

Principal Software Engineer

(C++ / CUDA / GPU / Cross-Platform / Python / AI)

CONTACT

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Location

Cape Town, South Africa

LinkedIn [linkedin.com/in/david-joffe-50771b4/](https://www.linkedin.com/in/david-joffe-50771b4/)

GitHub github.com/davidjoffe

Djoffe.com davidjoffe.github.io

Co-founder: TshwaneDJe.com

TECHNICAL SKILLS

Programming Languages

C/C++, Python, PHP, Lua, JavaScript (JS), C#, Pascal

GPU Programming, CUDA (NVIDIA), nvcc, PTX, SASS, sm_89, kernel programming, particle systems, molecular simulation (Lennard Jones), GPU computing, shaders

SDK Development; engine development

Simulators: Training Simulators; Flight simulators; Missile simulators; High-Voltage Yard/Line Simulators; Mining Simulators

Networking & IPC: TCP/IP, sockets; UDP, **Network programming,** PocoNet, REST APIs, RESTful, COM

Backend & Cloud: API development, microservices, nginx, Apache, AWS, distributed systems; Node.js, .NET, Docker, Kubernetes (K8s), minikube, Kustomize, Azure, aws-cli, GCP

Cross-Platform Development: Windows, **Linux, macOS,** WSL/WSL2. SDL; wxWidgets, CMake; Unix Mobile: adb (Android debug tool)

3D & Graphics: Unreal Engine, OpenGL, DirectX, SDL. Virtual Reality (VR); 3ds Max, glfw, imgui

Databases: SQL, PostgreSQL, MySQL, phpMyAdmin, ODBC

AI: LLM integration; OpenAI

SUMMARY: 30 years' experience building production C++ systems: GPU-accelerated simulation, complex, networked, cross-platform applications and engines (integrated web/API servers, real-time 3D/VR graphics simulators, **GPU & CUDA programming**, multi-user editing & publishing, **AI/LLM integration, API development**, localization.) Game development. Docker, Kubernetes, cloud. **Co-founder** of TshwaneDJe Software. Open to remote opportunities internationally with tech companies like Amazon, Microsoft, NVIDIA, AMD, Intel and Apple.

PRIMARY SKILLS/EXPERIENCE

C/C++, Python, PHP, Lua, JavaScript, C#, HTML/CSS. CUDA; GPU programming. 3D Graphics (DirectX, OpenGL, Unreal Engine); Virtual Reality. Cross-platform application development. **Networking** (TCP/IP sockets; **API development**; server development). **AI** integration. **Localization.** Web development. **SDK/engine development.** Software training; published research. *Hard-working; can adapt quickly to new languages, technologies & projects.*

Professional Experience

(2025) Built a CUDA-accelerated molecular simulation (Lennard-Jones + Verlet), scaling to ~100k particles on laptop GPUs, with cross-platform support, headless batch execution, container-based deployment with Docker/Kubernetes; designed as foundations for future computational biology and longevity-related work. **Source:** github.com/davidjoffe/dj-cuda-samples

Creator of runai, a command-line-integrated AI automation tool for real-world engineering & research workflows. **Source:** github.com/djsoftware1/runai

ACADEMIC IMPACT: Co-author of peer-reviewed research on electronic dictionaries, lexicography tooling, and user behavior (~390 Google Scholar citations; h-index 8). Research directly informed the design and adoption of TLex and related systems <https://scholar.google.com/citations?user=th4zRdgAAAAJ>

PRINCIPAL SOFTWARE ENGINEER & CO-FOUNDER

TshwaneDJe Software

(Apr 2004 – Present)

IMPACT: Software foundations of dictionary production in South Africa (and internationally), including whole new range of bilingual education dictionaries co-developed in partnership with Oxford University Press, in use by & help millions of learners daily

- **Principal Software Engineer:** Created **TLex Suite** (mainly C++), lexicography software applications in use by publishers like Oxford University Press. Consists of multiple **cross-platform applications** (TLex lexicography software, tITerm terminology software, concordance software); multi-user XML editing, relational database support, integrated **Web/API server**, scalability, many import/export formats (csv, txb, tmx, xdiff, html, rtf, xslt). >400,000 lines of code. Multi-threaded. I used libcurl to implement **AI integration** (OpenAI API, ollama, LM studio). **Integrated Lua scripting.** IPC (Inter-Process Communication). PHP-based Web Publishing platform. **Word/Excel integration.** (Used by Pearson, Malaysian Institute of Languages & Literature, more.) *Sample code on request: C++, PHP, Lua, ...*
- Designed & implemented built-in **tri-function integrated server** (web server, API server, & IPC server for inter-application communication, e.g. TLex/tITerm "linked mode") using PocoNet
- **Developed many websites** for clients, including dictionary & terminology platforms

integration, ollama and LM studio
integration, Generative AI

Version Control & Tooling: git,
GitHub, Visual Studio, VS Code,
gcc/clang, subversion

Other: Localization (tbx, tmx, xliff,
po; gettext); **Web development;**
HTML/CSS, high-performance
computing, x86 assembly 16-bit,
Adobe Photoshop, COM automation
(Word/Excel automation), Lua
integration, libcurl, XML, JSON,
VirtualBox.

In progress work: Metal (Apple)

Game development

Application development

**Software Training, Project
management**

Full [online resume](#)

Languages: English (1st language),
Afrikaans, basic Hebrew

Updated 31 Dec 2025

IMPACT: Online dictionaries help education & economic upliftment for many
users, such as africanlanguages.com/swahili/

SENIOR DEVELOPER

5DT (Fifth Dimension Technologies) (Dec 1995 – Apr 2004)

VR (Virtual Reality) (DirectX, OpenGL, TCP/IP networking, sockets, etc.)

IMPACT: Mining Training Simulators I developed are used by miners in
South Africa and internationally, helping broadly improve productivity of
mining which underpins much economic activity and development.

IMPACT: Flight Simulator Visualization System helps underpin training of air
force pilots.

- **C++** Developed 3D VR (Virtual Reality) **flight simulator** systems (integrated
at flight training center in Langebaan for SA air force)
- **C++** Developed 3D Virtual Reality mining training simulators; high-voltage
training simulators. 5dt.com/mining-simulators/
Including client/server networking, motion platform integration, UDP three-
screen projector synchronization, recording/playback, training features
- **C++** Co-developer of 3D VR driving training simulator
- **C++** (Lead Developer) Managed development of 5DT SDK (Software
Development Kit) (3D graphics OpenGL/D3D, sound, networking &
framework). Lead developer of networking library.
- **C++** 3D Unmanned Aerial Vehicle (UAV) simulator (for Kentron)
- **C++ (Lead Software Engineer)** Created 3D Virtual Reality guided missile
training simulator ("VR Polyphem" for EADS Europe) with virtual
environment (using real-world terrain & satellite data), virtual missile &
controls, infrared, networking

Key Projects

- **Dave Gnuke (Open Source)** Led development of cross-platform Retro 2D
Game that is now included in **official Debian** Linux. [GitHub source repo](#)
(C++)
- **runai – AI Task Automation CLI (Creator & Lead Engineer)**
Python, LLMs, CLI tooling, cross-platform
 - Designed and implemented a command-line Make-like, AI automation tool
that integrates directly into developer workflows (terminal / VS Code).
 - Enables context-aware, repeatable AI tasks such as code generation,
refactoring, batch content creation, and research automation.
 - Supports multiple LLM backends (local and cloud), optional multi-agent
workflows, and automatic code block extraction into files.
 - **Cross-platform** (Windows, macOS, Linux); executable from PATH in any
folder. Modular **backends**, safety controls, extensible task definitions.
 - Used for real-world tasks including scientific prototyping, codebase
refactoring, and large-scale content generation.*Source-available* under *Business Source License*; personal, research, and
evaluation use supported. – [GitHub source repo](#)
- **Custom 3D Engine & SDK (C++)** Co-developed a production-oriented 3D
game and simulator engine and SDK ("ddSDK") designed as a reusable
platform with modular subsystems for **rendering, networking**, audio, entities,
asset loading, and game logic. Implemented core engine architecture and
real-time client/server multiplayer networking; collaborated on an OpenGL-
based renderer inspired by Quake III-era engine design. The codebase was
professionally maintained and preserved across SourceSafe, Subversion,
and Git migrations and remains executable on modern Windows systems.
Source available on request.
- **EC Department of Education (2024):** Led development of multilingual
terminology server, software for editing & publishing the terminology, & built

Apps/website for learners to access the terminology. Also [presented the software training](#).

IMPACT: Help education and multilingual access to education resources for millions of learners

Education

BSc Computer Science- University of Pretoria - 1998