



# 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://linkedin.com/in/david-joffe-50771b4/)

GitHub [github.com/davidjoffe](https://github.com/davidjoffe)

DJoffe.com [davidjoffe.github.io](https://davidjoffe.github.io)

Co-founder: [TshwaneDJe.com](https://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](https://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](https://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, tlTerm terminology software, concordance software); multi-user XML editing, relational database support, integrated **Web/API server**, scalability, many import/export formats (csv, tbx, tmx, xliff, 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/tlCorpus "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 (1<sup>st</sup> language), Afrikaans, basic Hebrew

Updated 31 Dec 2025

**IMPACT:** Online dictionaries help education & economic upliftment for many users, such as [africanlanguages.com/swahili/](http://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/](http://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 GnuKem (Open Source)** Led development of cross-platform Retro 2D Game that is now included in **official Debian** Linux. [GitHub source repo](https://github.com/gnukem/gnukem) (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](https://github.com/runai-project/runai)*
- **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