

# Trung Le

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**Core Languages:** C/C++, GPU shader programming. **Secondary Languages:** Python, Rust, Swift, Javascript  
**Graphics APIs:** Vulkan, WebGL, OpenGL. **Tools/Engines:** Unreal, Unity, Houdini, Blender  
**AI/ML:** Generative adversarial networks (GANs), synthetic data generation, ML pipeline with artist-in-the-loop

## Experience

### **LEAD GRAPHICS ENGINEER, BAD ROBOT GAMES - JAN 2024 - PRESENT**

Established technical direction for all real-time graphics systems to deliver custom rendering features and optimize GPU performance targeting 60FPS, addressing stalls, hitches, shader compilation, crashes, and budget assets size to fit in memory on difference PCs specs and PS5. Provided consistent, on time and high quality cross-functional support for tech arts, lighting, VFX, and QA teams as I worked carefully to understand their needs and requirements. Designed and built a networked modular lighting system to support dynamic time of day, weather, and post processing effects to enhance the game visual experience. Trained QA and engineers to understand performance consideration for real-time needs, and to be able to package and profile game on target platforms, with the goal to align the team's mindset to be performance first. Coordinated with animation engineers to establish scalable performance regression workflows and used Claude Code to develop artist-friendly dashboard for in game memory report viewer.

### **GRAPHICS ENGINEER, DEVIATION GAMES - MAY 2021 - JAN 2024**

Implemented real-time signed distance field ray marching for animated characters in Unreal Engine 5, using skinned point clouds as the underlying data structure to inform dynamic movements. Collaborated with the R&D team and gameplay engineers to integrate the system into enemy combat pipeline. Developed additional rendering features including real-time portal rendering and real-time GPU tessellation using mesh shaders and compute shaders.

### **ML ENGINEER, GOOGLE STADIA - OCTOBER 2019 - MAY 2021**

Applied generative adversarial network (GAN) research to solve real-time graphics problems for video games. I worked on image generation for a procedurally generated card game with artist-in-the-loop feedbacks. Followed up with research into end-to-end ML pipeline for high fidelity fur rendering (hard problem in real-time graphics): generated custom 3D training datasets using Houdini and Blender, trained and tuned generative convolutional models on Google infrastructure, and designed game engine friendly inputs as control final generation.

### **AI PERFORMANCE PROGRAMMER, ROCKSTAR GAMES - JUL 2017 - OCT 2019**

Analyzed and optimized performance for AI systems in Red Dead Redemption II, Rockstar's premier narrative-driven, open world video game title with complex game AI interactions. Improved C++ game code for LOD management of AI physics, weapon and combat systems, transport systems, and pathfinding systems for PS4 and Xbox. Delivered game AI and animation optimization for scripted missions and resolved performance-critical bugs in the final weeks before release.

### **TOOLS PROGRAMMER INTERN, EPIC GAMES - JUNE 2016 - SEP 2016**

Implemented Unreal Engine 4 VR editing tools for terrain editing, virtual keyboards, and foliage painting to enhance developer experience for level designers and artists. Tools shipped in Unreal 4.13 and 4.14 updates.

### **FIRMWARE ENGINEER, JAWBONE – 2012-2014**

Developed infrastructure and applications for the UP3 fitness wristband on ARM Cortex and iOS platforms, including bluetooth protocol, authentication and encryption between devices and the mobile app, ML activity classification collection tools, peripheral drivers, USB interface, and app design.

### **RESEARCH ASSISTANT, UW SENSOR LAB+INTEL LAB – 2010-2012**

Designed a Python QT GUI for Wireless Resonant Energy Link (WREL) research, supporting data collection, data visualization, wireless control, and power diagnostics. The software was adopted at startup company Wibotic for wireless autonomous charging robots.

## Projects

Synthetic data generation, pathtracer, Vulkan Rasterizer, WebGL renderer. See full portfolio at [trungtuanle.com](#).

## Education

**University of Pennsylvania**, PA – MSE Computer Graphics, May 2017

**University of Washington**, WA – BS Electrical Engineering, June 2012