

Amandeep Singh

Principal Software Engineer (C++ / Low-Latency Systems)

Backend/Platform Engineer with 11+ years(overall 13+) in modern C++ and real-time, **performance-critical systems**. Experienced in **AR engine development (WebAR SDK), 3D Visualization** and skilled across **concurrency, SIMD, WASM, GPU/WebGL, Web Technologies**, and CV/3D engines.

✉ hey@amandeepsingh.dev

☎ +918380096989

📍 Pune, India

🌐 linkedin.com/in/amandeepsg

WORK EXPERIENCE

Principal Software Engineer Blippar

04/2022 - Present

Pune, India

Building and leading the WebAR SDK, an AR engine for web developers, specializing in Visual Odometry SLAM.

Key Contributions

- **Led the re-architecture of the WebAR processing pipeline**, modularized core stages and introduced CPU↔GPU parallelism (Web Workers + WebGL shaders) - **raising tracking throughput from 15→28 FPS (+86.7%)**.
- **Designed and implemented a custom ORB feature-extraction algorithm** that encoded corner data in RGBA channels across image-pyramid levels, **achieving 1.8× faster performance than OpenCV's implementation**.
- Optimized feature extraction and ORB descriptor creation using **SIMD intrinsics**, achieving a **5.6x performance increase over the initial implementation**.
- **Implemented an adaptive marker-tracking algorithm** with rate-limiting logic that fused **gyro, accelerometer, and pixel-motion data** to detect inactivity - **cutting redundant server requests and improving runtime efficiency**.
- **Collaborated with product, studio, and internal platform teams** to **define the SDK roadmap** and ensure **high-performance integration and developer support** across **rendering engines**.

Senior Software Engineer 2020 Spaces

03/2020 - 03/2022

Pune, India

Developed backend systems for web apps focused on interior design solutions, implementing complex parametric algorithms and advanced rendering logic.

Key Contributions

- Reduced production bugs by **87%** by refactoring a core engine module with **statistical set theory** and **custom data structures**.
- Developed a web app for generating and composing images and validating 3D models using a **custom in-house 3D engine** (C++ & WebAssembly).
- Built a **node-based desktop tool** for generating thumbnails from 3D models, using custom C++ modules.

Senior Software Engineer Geometric

09/2014 - 03/2020

Pune, India

Developed Windows-based 3D CAD products with advanced visualization and geometric algorithms for design and manufacturing.

Key Contributions

- Designed an algorithm in C++ to **detect and highlight changes in 3D CAD models**.
- Improved **3D model intersection algorithm efficiency by ~90%**.
- Created an **ML model using NLTK** to automatically assign bug reports to developers.

Software Engineer Capgemini

07/2012 - 08/2014

Pune, India

Worked as a Business Analyst & Developer, designing and implementing credit card products.

Key Contributions

- Developed new credit-card products and features using COBOL, including job execution and batch updates.

SKILLS

C++	C
Python	JavaScript
WebAssembly (WASM)	Web Workers
WebGL	SIMD
Multithreading	Parallel Computing
CMake	Node.js
AFrame/Three.js	MySQL

ACHIEVEMENTS & LEADERSHIP

Infinity O (2020)

Geometric

- Recognized as a **top performer for three consecutive years**.

Kaksha(The Learning Initiative) (2016 - 2020)

Geometric

- Founded and scaled a **weekly learning program** into an organization-wide knowledge-sharing initiative.

Techathon Winner(A Hackathon Event) (06/2015)

Geometric PLM

- Won a company-wide hackathon by building an IoT-based **"Smart Parking System"**; selected to present the project to the company's board of directors.

EDUCATION

B.Tech (Instrumentation & Control)

National Institute of Technology, Jalandhar

2008 - 2012

INTERESTS

Reading

Podcasts

Meditation

Gaming

Running

Writing Tech Blogs

COMMUNITY CONTRIBUTIONS

#TeamTrees - Supporting reforestation initiatives

Heartfulness Meditation - Volunteer & Trainer