

Mingyang Li

Game Developer / Graphics Programmer

Munich, Germany / Open to Relocation

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Work Experience

Master's Thesis Student

01/2025 - 06/2025

BMW Group

- Built large-scale urban environments in Unity using Mapbox SDK, modifying source code to support dynamic map type switching and runtime tile loading.
- Identified performance bottlenecks using Unity Profiler and Frame Debugger; reduced draw calls by 70.4% and decreased rendering time by 1.5 ms through AABB-based mesh combining, mesh simplification, and GPU instancing.
- Extended Unity as a Library (UAAL) to support multi-display in-vehicle rendering, enabling synchronized content distribution and interactive UI across multiple 4K screens.
- Developed a pygame-based external input and control interface over UDP or TCP, enabling real-time interaction and system control.

Research Intern

10/2024 - 12/2024

BMW Group

- Evaluated feasibility of replacing legacy in-vehicle rendering stacks with modern game engines (Unity / Unreal), comparing performance, package size, startup latency, and visual quality.
- Contributed to integration of Unity (UAAL) into IVI systems for on-demand rendering and interaction.
- Implemented real-time visual effects using Shader Graph, including shadows, reflections, and motion blur.

Student Tutor: Real-time Computer Graphics

04/2021 - 08/2021

Technical University of Munich

04/2020 - 08/2020

- Recapped key concepts covered by the professor during lectures.
- Guided students through course materials and answered questions related to real-time computer graphics.
- Reviewed programming assignments and provided feedback on code correctness and implementation issues.

Education

Informatics: Games Engineering (M.Sc.)

10/2022 - 11/2025

Technical University of Munich

Thesis: Design and Implementation of a Map-Based Game for Multi-Display Automotive User Interfaces

Informatics: Games Engineering (B.Sc.)

10/2016 - 08/2022

Technical University of Munich

Thesis: Implementation of a Location-Based Game with AR Features for Elderly People

Programming

C++	5+ yrs
C#	4+ yrs
Python	2+ yrs

Game Engines

Unity	5+ yrs
Unreal Engine	2+ yrs

Graphics & Rendering

DirectX 11	2+ yrs
HLSL	2+ yrs
Vulkan	1+ yr

Development Tools

Visual Studio
RenderDoc
Git

Languages

Mandarin	Native
English	C1
German	A2

Academic Projects

DirectX 11 FPS Prototype

04/2019 - 08/2019

Real-time Rendering / HLSL

- Developed an FPS game prototype from scratch using C++, DirectX 11, and HLSL without relying on existing game engines.
- Implemented procedural terrain generation and rendering, including DSA-based heightmap generation, smoothing filters, normal calculation, and texture blending.
- Wrote HLSL vertex and pixel shaders for terrain rendering, normal-mapped lighting, shadow mapping, and used a geometry shader to implement particle effects.
- Developed sprite-based explosion animations and particle systems organizing sprite rendering data with unified sorting to ensure correct transparency blending and rendering order.

Unity 3D Survival Game

10/2021 - 02/2022

Gameplay / Enemy Behavior

- Implemented a noise propagation-based enemy perception system to detect player activity and drive AI state transitions.
- Developed a lightweight finite state machine and NavMesh-based enemy behavior system, supporting patrol, idle, and chase states with dynamic pathfinding and response logic.
- Built Gizmos visualization tools and a NavMesh batch-baking tool to visualize enemy detection ranges and navigation paths, improving debugging and level-design workflows.

Unreal Room Escape Game

05/2020 - 08/2020

Character Control / AI

- Implemented character movement and interaction systems using C++ and Blueprints, including climbing, pushing, and rope swinging.
- Developed gameplay mechanics and visual effects in Blueprints, including dissolve effects and a laser reflection system.
- Implemented AI behaviors using state machines and behavior trees to guide players through the level.

Activities

UEFN Student Bootcamp

07/2026 - 08/2026

Epic Games

Completed hands-on training in Unreal Editor for Fortnite, developing gameplay mechanics and a playable project using UEFN and Verse.