

DHARMIK DAVE

SOFTWARE ENGINEER

www.linkedin.com/in/dharmikdave

EDUCATION

SOUTHERN METHODIST UNIVERSITY, MAY 2018

Masters of Interactive Technology (Specialization in Programming)

- Worked on an Unreal Engine 4 game and did master's thesis on Voxel Based Global Illumination

RAJIV GANDHI INSTITUTE OF TECHNOLOGY, MAY 2016

Bachelor of Engineering (Information Technology)

- Published technical paper titled "Public cloud integrated with Road Lane Divider System" in Indus Foundation.

WORK EXPERIENCE

CRYSTAL DYNAMICS (EMBRACER GROUP)

JUNE 2018 - NOV 2025

Software Engineer (Associate → I → II → III) | AAA Action-Adventure Titles

Gameplay & Traversal Systems – Unreal Engine 5 (The Future of Tomb Raider)

- Implemented new **traversal abilities** in C++/Blueprint by leveraging the Gameplay Ability System, working closely with design and animation to define metrics, timing, and feel; integrated motion warping, pose search, and motion matching, and led cross-studio reviews to align behavior across time zones.
- Owned the **Markup Subsystem** for traversal data, tagging ledges, cover points, grapples, and targets via points and splines so designers could author markup in Blueprint and freely kit-bash geometry without redoing work; partnered with level design and animation to validate metrics and created docs and short tutorial videos to standardize authoring.
- **Re-architected the Markup Subsystem's build & tick pipeline**, moving heavy work off the game thread so full-world markup builds went from ~2 hours of offline processing to real-time (under 2ms worst case on game thread) interactive in-editor and in-game rebuilds; coordinated with tools, build, and design teams and communicated results via demos and write-ups.

World Simulation Systems– Unreal Engine 5 (The Future of Tomb Raider)

- Built a configurable **Time of Day System** supporting multiple phases (dawn/day/dusk/night) and both exact-time triggers (e.g., 07:30) and "X% through phase" events, enabling designers to script encounters and ambience against in-game time; collaborated with lighting and design, wrote detailed tech design docs, and recorded usage walkthroughs.
- Created a **reusable Sector System** to partition the map via volumes/splines and attach subsystem data (audio, quest, biome, weather, etc.), giving multiple teams a shared spatial data layer instead of bespoke per-feature solutions; worked cross-discipline to define schemas and authoring UX and documented the workflow.
- Developed a **data-driven Dynamic Weather System** using tiled weather textures (RGB = temperature, precipitation, cloud coverage), wind textures (RG = direction, B = strength), and custom curves and overrides so designers and FX/audio could control weather behavior; collaborated with design, audio, and FX to tune the system and produced integration demos and guides.
- Implemented a **weather occlusion & wetness model** that reacts to wind direction/strength and level geometry so effects like rain and snow fall through openings like windows, cracks on wall/roof, and surface wetness behaves correctly indoors vs. outdoors; iterated with environment art and FX on visual quality.

FX & Engine Support – Proprietary Engine (Marvel's Avengers)

- Owned and extended the proprietary engine's **FX system**, used by gameplay and cinematic teams across a shipped AAA title.
- **Profiled and optimized FX-heavy content** to help maintain platform frame-rate targets, focusing on particle complexity, overdraw, and CPU cost; documented best practices for FX authors and shared findings in cross-discipline reviews.

INDIVIDUAL PROJECT

VOXEL BASED GLOBAL ILLUMINATION / Master's Thesis

- Achieved **indirect lighting in real time** with help of voxelization and light propagation volumes. Completed on my DirectX enabled personal engine.

610-714-1741

dharmikrdave@gmail.com

LANGUAGES

C/C++

Unreal Engine C++

Unreal Engine Blueprint

C#

DirectX/HLSL

Python

SOFTWARE

Visual Studio

Unreal Engine 5

Unreal Insights

Perforce

Jira

Confluence

SKILLS

Software Engineering

Gameplay programming

Traversal systems

Gameplay architecture

Character movement

Animation systems

Motion warping

Pose search

Motion matching

Prototyping

Input systems

Tools Programming

Systems Programming

Engine Programming

Performance optimization

Multithreading

Debugging

Cross-discipline Collaboration

Mentorship

Technical Documentation