

EDUCATION

• National Institute of Science and Technology, Pakistan

Bachelor of Science in Computer Science; GPA: 3.71

Islamabad, PK

Aug. 2019 – May 5th

EXPERIENCE

• Tintash

Assistant Solutions Architect

Lahore, PK

June 2019 - September 2019

- **VRay to PBR (MaxScript/C++)**: VRay and PBR are two 3d rendering standards.
 - Identified a bottleneck in the department pipeline and created automated solution to eliminate manual work of converting between the two standards.
- **Bump to Normal (C++/Godot)**: Bump maps are single channel maps that describe height, normal maps use three colours to describe the way light interacts with a surface. Both approaches suit different workflows.
 - Created an automated solution using Godot to "bake" the bump map into normal map.

• Systems Limited

Management Trainee Officer

Multan, PK

July 2023 - December 2023

- **Frontend development (JS)**: Initial prototyping for projects and proofs of concept. Collaborating with designers and negotiating with clients on features before project takes shape.
- **Backend development (JS/Rust)**: Scaffolding of backend projects. Managing consumer facing and operational databases. Optimization and extension of legacy backends, bringing them up to modern standards. Security analysis of services.
- **Visualisation/Automation (JS/Rust)**: Internal tools such as resume builder, collage creator, data dashboards (with D3.js) to speed up day-to-day development, sales and management processes. Collaborating with domain workers to identify requirements.

• Bricksol

Senior Game Developer

Lahore, PK

January 2024 – Present

As the senior developer in a team of initially 3 and now 7 consisting of game and web developers, and artists. I handle distribution of day-to-day tasks of the team, follow up on projects and assign training where necessary. I mentor them in industry tools and practices, as well as internal tools. I'm also the sole developer on complex projects.

- **Modulo 3D store (Unreal Engine/JS)**: Modulo is a Gulf-based company that aims to sell pre-fabricated houses.
 - I was the sole developer on this project and worked with artists on consumer-facing code and designer-aids.
 - Created an unreal project that communicates with the client's browser for a shopping experience enhanced by 3D visualization and can be deployed standalone or on a streaming service.
- **Darco Residences (Unreal Engine/JS)**: Darco is a Gulf-based real-estate agency. Their online store connects to an Unreal Engine instance in the cloud using PixelStreaming to present a mixed HTML+Unreal Engine experience.
 - Worked with artists on consumer-facing code and designer aids as the sole developer.
 - Managed deployment on local server.
- **Conzec Drone Flight Generator (Unreal Engine/JS/Rust)**: Conzec's Drone Flight Generator presents a frontend on the web where users can select locations by name and co-ordinates, along with other parameters. The Flight Generator distributes these coordinates between computers running an Unreal Engine package, which load the location and parameters, generating footage of a drone's flight path through the location. The footage is collected into the relevant S3 bins. The primary customers of this application are roofing manufacturers (like Mighty Dog Roofing) and Cinematographers (for scoping out locations virtually).
 - Created the flight generator Unreal Engine project that communicates with a controller to work on footage generation tasks.
 - Created the controller that manages multiple running instances and distributes generation jobs between them.
 - Created the user facing site, database and backend where users log in and enter generation requests.
 - Managed deployment of all mentioned components on AWS.
- **Operations Training Sim (C++)**: Operations Training Sim is a virtual training environment for onboarding of maintenance staff in data centers. It accurately.
 - Created simulations of physical phenomena such as Noise, Electricity, Fuels, Operator inventory and mechanical maintenance of components.

- **Football Simulator (Unreal Engine/Rust/JS):** Simulates different scenarios that arise in a tense match of football. Generates camera footage of match that responds to NDI input. The footage is used to train an external model that choreographs the camera in real matches to capture thrilling moments.
 - Created the football match simulation with all the behaviors of the players in Unreal Engine, These behaviors include shooting, chasing, tackling, zoning, passing, scoring and goal-keeping.
 - Created the pipeline that outputs feed from the virtual cameras to external sources using the NDI protocol and accepts camera parameter inputs.
 - Created diagnostic tools for self and on-site team.
 - Managed deployment of sim project on AWS and connection with video pipeline.
 - Collaborated with AI and on-site team about communication protocols and input standards.
- **Cervais CyberSec Sim (JS/Unreal Engine):** Provides a 3D visualization of a cyber-security unit, along with GIS. Users can explore each cyber-security unit in 3D and analyze links all in their browser.
 - Created the unreal engine project that provides the visualization. Managed deployment on ArcaneMirage.
 - Collaborated with client-side teams to extend their existing platform. Created the Unreal engine project, the frontend binding and the platform extension.

SKILLS

- **Programming Languages:** C++, JavaScript, Rust, C#, SQL, AngelScript, Haxe
- **Databases:** PostgreSQL, SQLite, CouchDB, MongoDB
- **General Purpose GPU Programming:** CUDA, Compute Shaders, wGPU
- **Game Engines:** Unreal, Godot, Unity, Bevy
- **Frontend Development:** Vanilla JS, React, NextJS, TailwindCSS, DaisyUI
- **Backend Development:** ExpressJS, NestJS
- **App Development:** Electron, Tauri, Flutter
- **Digital Content Creation:** Blender, Substance3D suite, 3ds Max, Inkscape

PERSONAL PROJECTS

- **Project Gaslight (C#/Python):** Unity and Python toolkit for designers to create experiences that use collective player data to change level difficulty. Includes a massively parallel pathfinder and an example project.
- **Mausam.me:** Tool for managing "Hobby seasons" for productivity.
- **C++ Game Engine:** C++/OpenGL based engine to quickly test rendering code and materials. Toy project to learn rendering and advanced C++.
- **JS Game Engine:** ThreeJS based game-engine inspired by Godot's architecture to manage 3D experiences on the web.