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Ahmed Rad Sakib

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Education

Ahsanullah University Of Science and Technology

Apr 2017 - Jan 2022

Dhaka, Bangladesh

- B.Sc in Computer Science and Engineering
- GPA **3.36** on a scale of 4.0

Research Experience

- **Under Graduate Thesis - "Data-Driven Time Series Forecasting of Hourly Solar Irradiance in Bangladesh"**
 - **Presentation:** Presented in *International Conference on Renewable Energy and Conservation*, 2024
 - **Supervisor:** Dr. S.M.A. Al-Mamun, Professor, Department of CSE, AUST.
 - **Description:** This study proposes a **time-series forecasting model** for hourly solar irradiance in Bangladesh, where data was cleaned using linear interpolation and downsampling, significantly improving prediction accuracy. Feature selection and time encoding further enhanced model performance. The Feedforward Neural Network achieved over **96% accuracy** in solar irradiance prediction. Validation across multiple cities using NASA satellite data demonstrated the model's robustness and generalizability.

Research Interest

- Computer Vision, Computer Graphics, Neural rendering, High Performance Computing (HPC), Extended Reality (XR)

Professional Experience

Enosis Solutions

Project: IQ3Connect (A browser-based 3D XR collaboration platform built for engineering design, training, and review)

Senior Software Engineer

September 2023 – Present

- **Reduced GPU usage and triangle count by 50% for 3D models**, optimizing rendering performance and **doubling frames per second (FPS)** for rendered scenes
- Implemented custom WebGL shaders to incorporate custom textures and various visual effects
- Implemented a versioning system for 3D models, reducing resource usage and improving efficiency
- Mentored peers in technical and professional skills, fostering collaboration and supporting their growth
- Optimized model animation by bypassing intermediate structures and directly manipulating shaders, **resulting in a 50% FPS improvement**
- Implemented **mesh decimation** pipeline **reducing triangle count upto 80% and achieving 2x rendering performance**, with minimal to no visual quality loss

Software Engineer

Dec 2021 – August 2023

- **Reduced (50%) storage space** and file parsing runtime by implementing overwrite mechanism for VR resource
- Improved user experience by simplifying model integration in the script editor
- Enabled media integration in iOS and OSX, by configuring Middleware, and API for media delivery
- **Implemented gripping mechanism of 3D models in 3D space** by VR controller
- Improved UI on mobile devices by removing 2D items from a 3D space by detecting collision using linear algebra
- **Reduced (70%) of RAM** required for loading 3D models by creating replacement mechanisms for different instances of a model
- Showed great dedication, performance and leadership qualities in workplace that resulted in an accelerated promotion

Links

- **iq3Connect website**
- **Video Overview**

Personal Projects

- **Fluid Surge - GPU-Driven Fluid Simulation Platform (In development)**

- **Developed multi-pass compute shader** pipeline using Babylon.js ComputeShader to simulate MLS-MPM fluid dynamics **entirely on GPU**
- Designed and implemented a mathematical **fixed-point encoding system** (128-bit simulation) to solve WebGPU's atomic operations on floating point number limitations, **achieving numerical stability among compute passes**
- Engineered GPU particle rendering via **ShaderMaterial-based screen-facing quads, handling millions of particles in real time**
- Built **adaptive spatial workgroup sizing** to optimize compute shader performance across different GPU architectures dynamically
- **Manipulated shader stage storage buffers (SSBO) directly for fluid physics calculations**, updating fluid particle positions for seamless rendering
- Architecting a modular system to integrate **Screen-Space Fluid Rendering (SSFR) and gaussian splatting for realistic fluid visualization**
- Directly mapped compute shader outputs to render shader inputs, eliminating CPU involvement and **ensuring zero CPU-GPU memory transfer overhead for real-time fluid position updates**
- Planning future export of **high-fidelity fluid simulation datasets** for AI/ML model training and physics-based machine learning research
- **Comics Streamer**
 - R&D on System Design for streaming content from a Cloud-based service
 - Developed a **real-time comics streaming platform** for Android, supporting genre-based recommendations and activity tracking, powered by Google Cloud Platform
- **Balloon Shooter Game**
 - **R&D on manipulating components on a WebGL environment** using C++ and graphics library
 - Implemented a balloon shooting game with time constraints for a given difficulty

Links

- [Fluid Surge github](#)
- [Comics streamer video overview](#)
- [Balloon shooter video overview](#)

Technical Skills

- **Languages :** C++, C, JavaScript, Java, GLSL, TypeScript, WGSL
- **Framework:** THREE.js, Vue.js, Node.js, Express.js, Babylon.js, WebGL, WebGPU
- **Database:** MongoDB, MS SQL

Additional Experience and Awards

- Champion, IAPC 2017: **Won the intra-university programming contest** through advanced problem-solving and algorithmic skills
- Solved **~600 problems on competitive programming platforms**, showcasing expertise in data structures and algorithms

REFERENCES

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