Austin Jetrin Maddison

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Leads technical strategy for complex real-time/offline graphics and asset creation pipelines.

EDUCATION

Mahidol University International College **Expected Graduation: Jan 2026**

B.S in Computer Science, Minor in Applied Mathematics (In major GPA 3.3)

EXPERIENCE

Mahidol University International College Apr 2023 - Apr 2025

Teaching Assistant Salaya, Nakhon Pathom

- Assisted students in mastering core programming concepts across courses including **Functional and Parallel Programming, Data Structures, Abstraction & Object-Oriented Programming, and Intro to Programming.**
- Provided **personalized guidance** in problem-solving and debugging, fostering a deeper understanding of course material.
- Graded **300+ assignments** across courses using automated scripts and manual instrumentation.
- Developed and refined **technical communication** and logical analysis skills, effectively conveying complex concepts to students.

Adapter Digital Nov 2023 - Mar 2024

Software Developer, Part Time Ari, Bangkok

Collaborated with design and innovation teams to create **3-player 3D game installation "Seemless City" for Bangkok Design Week 2024**.

- Implemented **real-time rendering features** such as **procedural meshes**, **HLSL shaders** using Unity's C# framework and high definition render pipeline.
- Highlight features: **dynamic multiple focal point vignetting** with variable feathering using signed distance fields (SDF), inertia **animation hooks**, fluttering cloth using **multi-scale perlin noise wind**, SDF **particle collisions**, **bloom/glare**.
- Extended **Intel RealSense's C# API** to allow for depth normalization and remapping to be used in calibration tool onsite.
- The reception was **overwhelmingly positive from 200+ participant surveys** and optional comments described that the full-body motion controls, multiplayer and 3D aspects were refreshing and unique.

Adapter Digital Aug 2023 - Sep 2023

Software Developer, Internship Ari, Bangkok

Developed a **real-time motion capture 3D installation** project "Hello Mascot" for the firm's product portfolio as their part of diversifying the kinds of digital products they can give to clients. The project's reception with colleagues was very positive and **surpassed expectations**.

- Collaborated with the innovation team's C# developer to implement **motion controls** using **Google's MediaPipe** library for pose landmark detection from external camera feed to interact with virtual character and world.
- Implemented **shaders for vegetation and cloud wind, stop motion clay river water wakes, stop motion clay character** and **fully gpu-driven 2D facial animations** using multi UVs and sin/cos functions for scheduling expressions.
- Modeled, textured, animated, layout and lit environment props and character assets using high-poly to low-poly pipeline.

PROJECTS

Faithful Plant Placement `VEX, OPENCL, C++, PYTHON, HLSL, HOUDINI-ENGINE, UE5`

Procedural vegetation simulation tools for Unreal Engine 5 based on environmental data.

- Developed **procedural simulation tools** for vegetation placement using climate, topology, and species data.
- Implemented **adaptive placement algorithms** and seeding logic using iterative optimization.
- Rendered **photorealistic snapshots** supporting simulation accuracy and art direction.

GPU-Based Monte Carlo Global Illumination & Irradiance Field Probes `C++, GLSL, COMPUTE-SHADERS, DEAR-IMGUI`

Real-time global illumination system using GPU Monte Carlo methods and irradiance probes.

- Developed a **high-performance GI system** with Monte Carlo methods for accurate light transport simulation.
- Implemented **GPU-based compute shaders** for ray marching in Signed Distance Field (SDF) environments.
- Designed an **irradiance probe system** for indirect lighting, optimizing computational efficiency.
- Benchmarked **Monte Carlo GI vs. irradiance probes**, showing **8x speedup** while retaining realism.

E-Sports Minecraft Modding and Server DevOps `JAVA, DOCKER, HTML, JS, FFMPEG-(WEBM), PYTHON, UNIX`

E-sports competition platform with modding, server deployment, and participant coordination.

- Managed **end-to-end competition logistics**, including scheduling and participant coordination.
- Deployed **dockerized game servers** for matches, ensuring reproducibility and stability.
- Programmed **custom mods** by forking plugins to enforce competition rules and enhance gameplay.
- Built **static websites** and assets for onboarding and competition information using GitHub Pages.
- Created a **registration dashboard** using Python and Google Workspace API for seamless participant management.

Seamless City - Bangkok Design Week 2024 `UNITY, C#, INTEL-REALSENSE`

Multiplayer 3D installation showcased at Bangkok Design Week 2024 with advanced graphics and depth sensing.

- Implemented **advanced graphics**: multifocal vignetting, cloth dynamics, SDF-based collisions, and interactive bloom/glare.
- Extended **Intel RealSense C# API** for onsite depth camera calibration.
- Praised by **200+ attendees** for it's unique multiplayer interaction.

Hello Mascot `UNITY, C#, GOOGLE-MEDIAPIPE`

Interactive mascot demo enabling full-body pose tracking and stylized GPU shaders.

- Enabled **full-body interactions** using Google MediaPipe pose tracking.
- Designed **GPU shaders** for stylized visuals and procedural sprite based facial animation via UV sets and blending.
- Modeled and animated high-fidelity characters for **live installations**.
- Delivered a successful **proof-of-concept** for internal company's product portfolio.

Mini Sky Engine `OPENGL, C#, GLSL, OPENTK, DEAR-IMGUI`

Atmospheric rendering engine simulating sky scattering and volumetric clouds in real-time.

- Simulated **atmospheric effects** with sunlight, sky scattering, and volumetric clouds using GPU LUTs.
- Built raymarcher render engine with **FBM noise** and procedural density shaping for clouds.
- Built **engine architecture** in C# with shader management and IMGUI for debug GUI.

HateMatch - Dating Platform Web Application `VUE, VUETIFY, JAVA, SPRING`

Dating platform web application that connects users through shared dislikes and contrasting preferences.

- **Designed and developed** the entire frontend using Vue and Vuetify, including **user authentication**, **profile management**, and simple interactive **matching interface**.
- Engineered **custom Vuetify theme** and a **context sensitive floating cursor** for fun profile navigation, elevating UX.
- Integrated Java Spring backend for **secure user authentication** and data management.
- Prototyped **matching algorithm** using pairwise user preference negation, enabling MVP-level functionality with future optimization in mind.

SKILLS

Programming Languages

`C#/.NET` `Java` `Python` `JavaScript` `C/C++` `TypeScript` `Go` `Scala` `Lua` `VEX` `GLSL`

Web Development

`HTML/CSS` `React` `Hugo` `Tailwind` `Spring-Boot` `Jinja2` `Flask` `Vue` `NextJS` `Bootstrap` `Vite` `REST` `WebAssembly` `Electron` `ThreeJS` `Firebase` `Redis` `SQL` `MySQL` `PostgreSQL`

Data Science

`Jupyter-Notebook` `NumPy` `SciPy` `Pandas` `Seaborn` `MatPlotLib` `MATLAB` `TensorFlow` `Apache-Spark`

Graphics & 3D

`OpenGL` `Godot` `Unity` `UE5` `Houdini` `Maya` `Blender` `Cinema-4D` `Redshift` `Adobe-Suite` `ComfyUI` `DearImGUI` `CUDA` `OpenCL` `FFMPEG` `OpenCV`

DevOps & Tools

`Git` `Unix` `CMAKE` `JUnit` `GitHub-Actions` `Kafka` `Apache-Airflow` `Kibana-ElasticSearch` `Docker`

AWARDS

Outstanding Cambridge Learners Awards - Thailand: Highest Achievement Award for Digital Media and Design 2020
Cambridge Assessment International Education

LANGUAGES

English: *Native speaker*, **Thai**: *Conversational*