Mehek Jethani

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Education

Brown University Providence, RI

B.Sc. in Computer Science *September 2020 – May 2024*

Coursework: Advanced Computer Graphics, Computer Vision, UI/UX, Deep Learning, Computer Systems, Data Structures and Algorithms, Discrete Math, Linear Algebra, Statistical Inference

Experience

Engine Engineering Intern May 2023 – Present

Activision, Infinity Ward *Los Angeles, CA*

- Leading a sustainability initiative for Call of Duty Modern Warfare II
- Developing rendering features to cut back energy consumption in the game's multiplayer frontend
- Writing C++ code for a Triple A game engine supporting a live product with regular title updates

Undergraduate Teaching Assistant May 2022 – Present

Brown University *Providence, RI*

- Designed assignment code and handouts for Brown's CSCI 1230 computer graphics course in C++ and OpenGL
- Oversaw a team of TAs in completely rewriting multiple course projects and individually created a new assignment with an interactive Qt OpenGL demo to teach students about coordinate spaces and affine transformations
- Hosted two sets of weekly office hours during the semester to provide one-on-one conceptual and debugging help

Undergraduate Research Assistant May 2021 – May 2023

Brown University *Providence, RI*

- Led a team of research assistants in building a MERN stack Typescript browser-based hypermedia system
- Delegated coding tasks, supervised weekly meetings and codebase updates, performed user testing, managed member recruitment, and instituted a peer code review system
- Introduced features for audio/video playback and editing, digital handwritten note transcription, and a table schema interface for viewing and modifying collections of document metadata

Projects

Intrinsic Triangulations | *C++, Qt, Eigen* April 2023 - May 2023

- An implementation of the SIGGRAPH 2019 paper "Navigating Intrinsic Triangulations" from scratch
- Translated paper concepts into code to create a data structure for an intrinsic representation of a triangle mesh and wrote algorithms for constructing, querying, and refining these meshes

Geoguessr CNN | *Python, Tensorflow, Google APIs* April 2023 - May 2023

- Compared the performance of two models built off of ResNet50: one for country classification and one for latitude/longitude coordinate prediction based on streetview images similar to the game Geoguessr
- Implemented GradCAM in Tensorflow for the classifier model for intepreting model results
- Trained on a novel dataset of streetview images scraped from the Google Maps API into Google Storage Buckets

Path Tracer | *C++, Qt, Eigen* February 2023

- Physically based renderer using Monte Carlo sampling to produce images with soft shadows and caustics
- Implemented BRDF importance sampling, depth of field, specular refraction with Fresnel reflection, and event splitting for direct and indirect lighting

Chess Vision | *Python, OpenCV* May 2022

- Python app to identify and digitally display chess moves from a physical board through a live webcam feed
- Used only traditional CV techniques such as Canny Edge Detection and Hough Transforms to support a fully transparent algorithm free of black box deep learning methods and external data

Technical Skills

Languages: C/C++, Javascript/Typescript, HTML/CSS, Python, Java
Frameworks/Libraries: React, Node.js, OpenGL, Eigen, Tensorflow, OpenCV, Flask, Next.js, TailwindCSS
Tools: VS Code, Visual Studio, Qt, Git, Google Cloud Platform, Figma, Photoshop, Illustrator, Blender