Mehek Jethani

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Education

Brown University — Providence, RI
B.Sc. in Computer Science — *September 2020 – May 2024*
GPA: 4.0/4.0

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

Professional Experience

Engine Engineering Intern | *C++, Visual Studio, Perforce, Jira, Confluence* — May 2023 – August 2023
Activision, Infinity Ward — *Los Angeles, CA*

- Wrote PC and console C++ code for the cross-platform Call of Duty game engine supporting a live product
- Created and shipped the new Eco Mode setting, launching CoD's Sustainability Initiative
- Developed rendering features that reduce power consumption in the multiplayer game lobbies by almost 50%
- Collaborated with Microsoft to profile power usage changes on XBox using PIX and implemented telemetry features to gather player device performance data

Undergraduate Teaching Assistant | *C++, OpenGL, Qt* — May 2022 – Present
Brown University — *Providence, RI*

- Designed assignment code and handouts for Brown's CSCI 1230 computer graphics course in C++ and OpenGL
- Rewrote two projects and created a new interactive assignment about coordinate spaces and transformations
- Host 4 weekly office hours (2 sets of 2) during the semester to provide one-on-one conceptual and debugging help

Lead Research Assistant | *React, TypeScript* — May 2021 – May 2023
Brown University — *Providence, RI*

- Led a team of 6-8 research assistants in developing Dash, a MERN stack Typescript browser hypermedia system
- Delegated coding tasks, supervised weekly meetings, performed user testing, handled member recruitment, and instituted code reviews to manage updates to a 100,000+ line codebase
- Implemented tools for audio/video editing, digital handwriting transcription, and document metadata interaction

Academic Projects

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

- Implemented the SIGGRAPH 2019 paper "Navigating Intrinsic Triangulations" in C++ for easier computations on irregular triangle surface meshes without disturbing the geometry
- Translated research paper concepts into code to create a modified half edge mesh 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 using ResNet50: one for country classification and one for latitude/longitude coordinate prediction of streetview images inspired by the game Geoguessr
- Implemented GradCAM in Tensorflow for interpreting the classifier model results
- Trained on a novel dataset of 15,000 streetview images scraped from the Google Maps API

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

- Built a physically based renderer with Monte Carlo sampling to produce images with soft shadows and caustics
- Implemented next event estimation for direct and indirect lighting, refraction with Fresnel reflection, BRDF importance sampling, and depth of field

Chess Vision | *Python, OpenCV* — May 2022

- Created a tool to identify and digitally display chess moves from a physical board through a live webcam feed
- Used traditional computer vision techniques such as Canny Edge Detection and Hough Transforms to create a socially responsible algorithm free of black box deep learning methods and external data

Technical Skills

Languages: C/C++, Python, Javascript/Typescript, HTML/CSS, Java
Frameworks/Libraries: OpenGL, Eigen, Tensorflow, OpenCV, React, Node.js, Express.js, Next.js, TailwindCSS
Tools: Unix, VS Code, Visual Studio, Qt, Git, Perforce, GCP, MongoDB, Figma, Photoshop, Illustrator, Blender