SANJANA MISHRA

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SKILLS

Python | C++ | C | React | JavaScript | C# | HTML5 | CSS3 | Node.js | MATLAB | Elm | SQL | Java
PyTorch | OpenCV | Unity | Unreal Engine | NVIDIA Omniverse
Machine Learning | Generative AI | Computer Vision | 3D Development | Software Engineering | Front-End Development

EXPERIENCE

Hypothetic *Vancouver, CA; 05/2023- 12/2023*
Machine Learning Engineer Co-op

- Engineered and implemented a streamlined pipeline for 3D data processing.
- Leveraged and prompt engineered VLMs, Multimodal LLMs for auto-captioning, auto-tagging, and generating CLIP and text embeddings.
- Achieved a significant 30% higher search accuracy rate, enhancing smart-search functionality efficiency.
- Developed a CNN using PyTorch and Kaolin for Physically Based Rendering (PBR) texture generation.
- Introduced novel pooling functions and optimizations to enhance feature capture, resulting in a 10% reduction in processing time.
- Collaborated in crafting a task-oriented assistant for efficient function execution.

MeMeraki Retail and Tech Pvt. Ltd. *Remote; 06/2021- 09/2021*
Software Development Intern

- Developed and redesigned the company website using JavaScript, Liquid, HTML5, and CSS3.
- Achieved a notable 50% increase in user engagement with an intuitive interface and updated design.
- Collaborated on an advanced course organization platform, enhancing the learning experience for local Indian artisans.
- Improved platform usability by 15% through essential feature integration, including filtering options, chat, and a rewards program, resulting in significant customer retention and increased revenue for MeMeraki.

ICE Information Technology *Dubai, UAE; 05/2019- 07/2019*
Technology Intern

- Provided strategic insights on ISO 27000 and 27001 frameworks, contributing to client presentations for product purchase through comprehensive exploration of VAPT, and security devices like firewalls, IDS, IPS, and SIEM.

PROJECTS

Edge-aware Point Cloud Upsampling **GitHub**

- Developed a CNN that takes in a low resolution point cloud as an input and produces a high resolution point cloud whilst being mindful of the edges using PyTorch, COLMAP and PointNet++.
- Devised a novel Loss Function, Magnetic Loss, which "pulls" points towards the edges based to retain details.
- Trained and tested on S3DIS dataset with results surpassing PUNet's benchmark by 20%.

Data Synthesis and Extraction using Nvidia Omniverse **GitHub**

- Simulated a digital twin of an outdoor farmstead using UE5, Omniverse to generate trainable data and used this synthetic dataset to train a YOLOv5 network for object detection.
- Analyzed the training results to conclude that the dataset must contain at least 20% real world data for best detection results and to avoid overfitting to synthetic data.

Middle School Architect **GitHub**

- Developed a platform in Elm for the construction of buildings to teach young students about coding and math concepts of 3D geometry through computer graphics, visual programming, and high-level math.
- Collaborated with McMaster University faculty to contribute to the university's outreach program through Middle School Architect resulting in an improvement of programming skills for a significant number of students.

COVID-SCAPE: Crowd Detection using IoT **GitHub**

- Developed a real-time crowd detection system using Computer Vision (Python, NumPy, OpenCV, Haar Cascade Features) and IoT for identifying overcrowded areas through object detection.
- Achieved 10x faster high accuracy in people counting across scenes, validating the system's effectiveness.

Implementing Security in IoT systems via Blockchain **Paper**

- Proposed the integration of Blockchain into current cloud-based IoT systems to fortify their security, following a comprehensive analysis of prevailing security concerns within a weather detection system.

EDUCATION

Simon Fraser University Burnaby, CA
MSc. in Professional Computer Science (Specialization in Visual Computing) - 3.67 GPA* *09/2022 - Current*

Vellore Institute of Technology Vellore, IN
Bachelor of Technology in Computer Science & Engineering - 8.97/10 CGPA *07/2018 - 06/2022*