Dinesh C Dhotrad

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PROFESSIONAL SUMMARY

Results-driven **Computer Vision & AI Engineer** with **3+ years** of experience in the development and optimization of computer vision with deep learning models and large-scale AI systems (HPC). Expertise in parallel computing, photogrammetry and computational geometry, and real-time vision applications for autonomous systems. Passionate about parallel computing, GPU acceleration (CUDA, TensorRT) and ADAS. Proven success in improving model efficiency, scalability, and deployment across NVIDIA Jetson, AWS, and embedded AI environments.

TECHNICAL SKILLS

- **Languages:** Python, C++, C, CUDA.
- **Deep Learning & ML:** PyTorch, Scikit-Learn, Keras
- **Computer Vision:** OpenCV, Open3D, SLAM, Photogrammetry, GANs, NeRF
- **Parallel Computing:** CUDA, OpenMP, Multi-GPU Training, Distributed Computing
- **Deployment & Cloud:** AWS SageMaker, TensorRT, Docker, Kubernetes
- **Embedded & Edge AI:** NVIDIA Jetson, Pi + NPU , ROS

PROFESSIONAL EXPERIENCE

3D AI Lead Engineer, GPU.net (formerly brahmGAN) – Bengaluru, IN June 2023 – Feb 2024

- **Architected parallelized deep learning pipelines** for **text-to-3D, image-to-3D, and video-to-3D** model generation using a combination of **NeRF & Photogrammetry.**
- **Designed a decentralized GPU** computing framework for **distributed AI training**, reducing cloud costs by **30%**, improving affordable Multi-GPU Accessibility.
- **Developed secure data masking solutions** and containerized **GPU workloads using Docker**, enabling privacy-preserving computation on personal GPUs within the decentralized framework.

Software Engineer (Computer Vision), Tooliqa Innovations LLP – Gurugram, IN Mar 2021 – Apr 2023

- **Developed a 360° Video-to-3D Model Pipeline** using a hybrid **Deep Learning + Classical Computer Vision** approach, reducing background noise by **90%** via a proprietary 3D voting algorithm and improving AR/VR prototyping for AEC (Architecture, Engineering & Construction) Clients.
- **Optimized Indoor 3D Reconstruction Pipelines** using **iPhone LiDAR, Intel RealSense**, and edge devices, improving trajectory accuracy by **25%** through **sensor fusion** and improving real-time 3D reconstruction efficiency.
- **Designed Core UV Texturing Algorithms**, achieving **15x** faster point-to-camera image plane projection with reduced computation overhead, significantly improving SLAM-based 3D model texturing.
- **Implemented Camera Sensor Fusion & Trajectory Optimization**, integrating multimodal data (RGB, Depth, IMU) and enhancing loop closure & path construction for high accuracy computational geometry and autonomous applications.
- **Engineered Robust Data Preprocessing Pipelines** for SLAM & photogrammetry, converting **RAW depth sensor data** and optimizing **point-cloud generation** for accurate 3D scene reconstruction.

Research Project (Internship), KLE Technological University – Hubballi, IN Aug 2020 – Feb 2021

- **Designed a GAN-based Deep Learning model** for underwater robotics, enhancing **color correction, clarity, and tint removal**, improving image visibility in deep water by **60-75%** as comparing it with above water.
- **Trained on both underwater & above-water datasets**, enabling adaptive enhancement for varying depths and lighting conditions.

Project Trainee (Intern), Indian Institute of Technology – Delhi, IN June 2019 – July 2019

- Gained exposure to research-based **medical imaging** and deep learning collaborating with **AIIMS Delhi** to build an automated **AI-driven surgical micro-suturing assessment tool** for neurosurgical training.

EDUCATION

Case Western Reserve University, MS in Computer Science Aug 2023 – May 2025

- **Coursework:** Designing High Performance System for AI, High Performance Data and Computing,Digital Image Processing, Modern Robot Programming

KLE Technological University, BE in Computer Science Aug 2017 – May 2021

- **Coursework:** Computer Vision, Embedded Intelligent Systems, Data Mining, Distributed & Cloud Computing

KEY PROJECTS

Multi-GPU Pipeline Parallelism for Large Language Models

- Optimized large-scale language models (transformers) using **GPipe** and PyTorch pipeline parallelism.
- Achieved a **42% speedup** in training throughput, significantly improving multi-GPU utilization and reducing memory overhead.
- Integrated **PyTorch's distributed pipeline APIs** to enhance GPU utilization and scale transformer-based models across multiple GPUs.

3D Point Cloud Segmentation Using 2D Image Segmentation

- **Developed a hybrid 3D segmentation approach** by integrating OneFormer's 2D image segmentation with 3D point-cloud analysis, significantly reducing computational complexity.
- **Optimized computation efficiency** by utilizing camera calibration and back-projection techniques to streamline the mapping of segmented images onto 3D point clouds.
- **Implemented a voting-based segmentation** approach, achieving superior efficiency compared to traditional deep learning models like PointNet and PointFormer.

Real-Time Vehicle RoadSense: ADAS for Autonomous Driving

- Built an advanced vehicle, lane, and pedestrian detection system integrating YOLOv8 with classical image processing.
- Optimized camera calibration, lane departure warnings, and object detection for intelligent transportation systems.
- Enhanced lane detection using polynomial fitting & perspective transformations, improving lanekeeping accuracy in real world scenarios.

Adversarial Attack on ML Models

- Designed adversarial perturbations to expose vulnerabilities in deep learning classifiers.
- Analyzed model robustness by generating adversarial samples, improving resilience against malicious attacks.
- Demonstrated real-world implications for AI security in medical and autonomous systems.

CERTIFICATIONS

- **Fundamentals of Accelerated Computing** with CUDA C/C++ – NVIDIA
- **Course on 3D Computer Vision** – IIIT Hyderabad
- **Improving Deep Neural Networks:** Hyperparameter Tuning, Regularization and Optimization – Coursera
- **Deep Learning in Computer Vision** – Coursera
- **AWS Fundamentals:** Going Cloud-Native – AWS, Coursera
- **Problem Solving through Programming in C** – NPTEL

ADDITIONAL INFORMATION

Languages: English (Professional), Kannada (Native), Hindi (Fluent)

Interests: Open-Source AI, AI for Robotics, Autonomous Vehicles, Motorcycle, Photography & Videography