LinkedIn: /ml-bhanuprakash
GitHub: /ml-bhanuprakash

Bhanu Prakash

Gen AI | Computer Vision | ML

Hyderabad, INDIA
(+91)9182841695
ml.bhanuprakash@gmail.com

PROFILE SUMMARY

AI Engineer with over 3 years of combined industrial and collaborative experience in developing advanced AI solutions. Led multiple simulator-based projects involving custom environment creation, texture design, self-driving agents, and sim-to-real (Sim2Real) pipelines, working closely with simulator teams to bridge technical gaps and deliver robust outcomes. Experienced in autonomous vehicle systems, including data acquisition, live testing, and performance evaluation of self-driving tractors using ROS and stereo camera setups. Proficient in Deep Learning, Transformers, Vision-Language Models, PyTorch, and OpenCV, with a strong focus on building end-to-end AI systems for computer vision and multimodal application

SKILLS

Deep Learning, Computer Vision, Generative AI, Transformers, Vision-Language Models, YOLO, Image Segmentation, SfM, 3D Reconstruction, ROS, Sim2Real, Stereo Camera, PyTorch, OpenCV, LangChain, LangGrap Python.

AI PROJECTS

Find It or Create It – Vision Transformer Multimodal Fashion AI Platform: **(WEBSITE LINK) | (DOCS)**

Built an AI-powered web platform that enables text + image-based outfit discovery and custom designer booking for Indian traditional fashion. The system integrates the **SigLIP Vision Transformer** for cross-modal embeddings and **FAISS** for high-speed similarity search. A Flask backend handles data automation and designer assignment workflows, supported by a structured **JSON dataset** that links embeddings, FAISS indices, and product records via unique IDs.Enhanced query relevance using **Ollama (Mistral LLM)** for SEO-optimized text generation, and deployed the entire pipeline with **Docker** on **Hugging Face Spaces**, ensuring scalability and secure dataset management.Demonstrates expertise in **Vision Transformers, LLM pipelines, vector search, and full-stack AI deployment.**

CCTV to Stereo – 3D Vision System Built from Hikvision Cameras: **(DOCUMENTATION LINK)**

Built a **custom stereo vision system** using two **Hikvision 2MP IR Bullet Cameras** for indoor calibration and outdoor vehicle testing. Performed stereo calibration, rectification, and depth estimation using **OpenCV**, and addressed real-world challenges like power stability, voltage variation, and live monitoring via a **TP-Link router with OpenWRT**. Mounted on a vehicle, the system validated dynamic depth estimation and pixel correspondences, providing hands-on experience in stereo geometry, **real-time depth mapping**, embedded networking, and automotive deployment. The project includes detailed documentation and demo videos for reference.

End-to-End YOLO Object Detection Pipeline (Data to Android Deployment): **(DEMO LINK)**

Built a custom **YOLO annotation tool** with features to **draw, add, and delete object classes**.
Added **image enhancement** for **low-light/night images** for accurate labeling.
Converted the model to **TFLite** and deployed a **real-time Android object detection app**.

Self-Driving Car with Lane Detection using Arduino **(DOCUMENTATION LINK) | (DEMO LINK)**

Implemented **real-time lane detection** using **Pixel Summation**, **thresholding**, and **perspective warping** to calculate road curvature. Integrated with **Arduino**, **TB6600 stepper driver**, and **NEMA 17 motor** to automate steering, demonstrating hands-on experience in **computer vision**, **robotics**, and embedded systems

WORK EXPERIENCE

3D Wedding Reconstruction & VR Visualization | (Dec 2024 – Present) **(DOCUMENTATION LINK)**

- Led end-to-end technical execution of a research project combining **computer vision**, **3D reconstruction**, and **VR visualization** to create interactive wedding experiences, inspired by **GTA-style open-world navigation**.
- Collaborated with a professional **Telugu film editor** for creative direction, ensuring high-quality cinematic storytelling using original video footage.

- Designed and managed **multi-camera setups** (DSLRs, drones, smartphones, CCTV rigs) to capture **multi-angle, high-overlap footage**, optimizing for **quality, cost**, and **scalability.**
- Built **dynamic and static 3D point clouds** using **COLMAP, Agisoft Metashape, RealityCapture, Meshroom, Pix4Dmapper**, and **OpenMVG/OpenMVS**; optimized camera poses and processing outputs for **VR-ready visualization**.
- Developed **multi-camera rigs** for **synchronized moving point clouds**, capturing **human gestures** and **interactions** while exploring **real-time motion reconstruction** limits.
- Converted reconstructed scenes into interactive **VR/HTML environments**, applied **cinematic stylization** with **Adobe After Effects**, and generated **print-ready 3D models** for demonstrations.

Perception Engineer – Monarch Tractor (Zimeno India Private Limited) (April 2023 – Nov 2024)

Tools & Technologies: Python, **PyTorch**, **OpenCV**, **Unreal Engine**, Stereo Vision, Object Detection, Segmentation, Depth Estimation, Point Clouds, EXE Tool Development

Key Responsibilities & Achievements:

- Led **AI perception development** for autonomous tractors, bridging AI and Simulator teams to align real-world and virtual data workflows; demo video of the autonomous agent driving itself in simulation (DEMO LINK)
- Developed and trained **object detection**, **segmentation**, and **stereo vision models** to enhance tractor perception in complex agricultural environments.
- Built **Camera Clarity models** for real tractors to detect mud, blur, water droplets, and glare, ensuring reliable perception under challenging conditions.
- Planned and designed **Sim2Real adaptation**, converting simulator (game-engine-based) visuals into realistic data for future model testing across diverse environments and perception tasks.
- Developed custom **EXE-based annotation tools** for Object Detection, Segmentation, and Point Cloud labeling; managed annotation teams (in-house and outsourced), handling task assignment, progress tracking, and quality assurance.
- Conducted tractor **stoppage diagnostics**, identifying root causes of unexpected stops — including perception errors, autonomous decision faults, control issues, or software failures — and implemented solutions to reduce false detections.
- Processed and aligned **3D point clouds** from real-world and simulated sources; generated **3D meshes** in the simulator to recreate realistic field environments for AI model training and validation.
- Built and maintained a **Data Management Tool** to automate dataset ingestion, cleaning, deduplication, and metadata tagging — improving data accessibility and storage efficiency across teams.

Tailortech Private Limited (CloudTailor), Hyderabad - Machine Learning Engineer (April 2022 - Mar 2023)

Online Human Body Measurements**:** **(DEMO LINK)**

- Solely designed and implemented a complete end-to-end **computer vision system** to automatically extract **human body measurements** from front and side images.
- Used **MediaPipe** to detect precise **body landmarks** and compute measurements (shoulder, bust, arm, thigh, waist, hip) along with height, assuming proper standing posture.
- Enabled fully automated measurement extraction when the person stands correctly, reducing manual intervention and improving accuracy.
- Delivered a **personalized styling service** that recommends outfits based on accurate measurements and reference images, achieving **98% measurement accuracy**.

Cloth Pattern Detector:

- Developed an **image recognition** and **reverse search tool** using **ResNet-50 embeddings** to identify clothing and accessories from reference images and rank results by similarity.
- Extended search to the **web** for additional relevant items, enabling **personalized fashion recommendations** for rapidly changing trends.

DECLARATION

I hereby declare that the details and information given above are complete and true to the best of my knowledge

Name: B. BhanuPrakash

Place: Hyderabad, India