

# Satyajit Ghana

Head of Engineering · 3D Vision · MLOps

Bengaluru, India

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## SUMMARY

Engineering leader and deep-learning engineer specializing in 3D computer vision, SLAM, and production MLOps. I design end-to-end systems — from LiDAR point-cloud reconstruction and custom neural networks to scalable cloud deployment — and lead teams shipping construction-AI scanning products. I also design and teach production MLOps curricula.

## EXPERIENCE

### Head of Engineering

Apr 2023 – Present

*Inkers Technology Pvt Ltd, Bangalore*

- Led development of new laser-scanning device prototypes with improved laser accuracy and integrated RGB and thermal cameras.
- Developed a modified SLAM algorithm that enables scanning in small, confined spaces and reduced drift by 50%.
- Built a point-cloud cleaning algorithm that reduced cloud thickness from 2 cm to 1 cm while preserving detail.

Stack | ROS1, C++, PCL, Eigen, Python, Open3D, CloudCompare

### MLOps Instructor

Feb 2022 – Present

*The School of AI, Bangalore*

- Designed and taught the EMLOV2 and EMLOV3 production-MLOps courses end to end.
- Covered containerized ML, Kubernetes/EKS model serving, MLOps pipelines, and LLM fine-tuning (PEFT/LoRA, vLLM, GGML, LangChain).

Stack | PyTorch, HuggingFace, Docker, AWS (EC2/S3/ECR/EKS/ECS/EFS), Kubernetes, TorchServe, GGML

### Deep Learning Software Engineer

Apr 2022 – May 2023

*Inkers Technology Pvt Ltd, Bangalore*

- Optimized the point-cloud cleaning and meshing algorithm to produce meshes accurate to within 1 cm.
- Designed and trained a custom transformer for 3D mesh part segmentation, deriving construction material quantities.
- Reduced mesh sizes from 1.2 GB to 120 MB via texture optimization, compression, and Blender decimation, enabling in-browser rendering.
- Built a construction-defect identification and tracking module on 3D textured meshes by projecting segmentation into 3D and clustering.
- Migrated the Observance web app from Bootstrap to TailwindCSS + PrimeReact and built a task-management module with roles and authorization.
- Synchronized LiDAR, camera, and IMU streams to improve the 3D SLAM algorithm and reduce drift; cut GPU load 30% with on-demand rendering and computed floor-plan deviations with Hausdorff distance on the frontend.
- Built a one-of-a-kind thermal-camera integration with 3D scanning to produce 3D thermal maps, visualized on the frontend.

Stack | PCL, ROS, Open3D, Blender, PyTorch, TailwindCSS, React, THREE.js, MeshLab, CloudCompare

### Associate Deep Learning Software Engineer

Jul 2021 – Apr 2022

*Inkers Technology Pvt Ltd, Bangalore*

- Developed the full-stack web app for Observance.AI, an end-to-end construction-AI platform.
- Migrated facial-recognition onboarding to AWS Lambda, onboarding people in minutes with up to 2,000 parallel Lambdas.
- Optimized the data pipeline on HPC instances (p3/p4, g4dn, r6i), processing 1–2 TB/day on S3 with 128-core / 1024 GB spot instances.
- Implemented 3D reconstruction and texturing from LiDAR + RGB SLAM, automating the pipeline with Blender scripting for structural-defect identification.
- Built a 3D LiDAR scan visualization platform with annotations, area/length/angle/volume measurement, synced renderers, and post-processing.
- Developed a camera-to-LiDAR texture optimization algorithm in PyTorch3D that reduced photometric projection error.

Stack | React, Flutter, DevExtreme, THREE.js, Frappe, PyTorch, LiDAR, AWS (EC2/S3/ECR), Kinesis Video Streams

### Visual Processing Intern

Jun 2020 – Jul 2021

*Inkers Technology Pvt Ltd, Bangalore*

- Designed a custom GStreamer plugin for DeepStream performing near-real-time stereo rectification, and deployed on edge devices (Xavier NX) via Docker at stereo 4K @ 30 fps for detection and tracking.
- Optimized YOLOv4-Tiny for TensorRT for a 2x speedup and managed multi-GPU training on AWS (8x V100) with data backup and synchronization to cut costs.
- Built a driver-monitoring system estimating driver state from glucose levels, pose, and eye landmarks, with a real-time Flutter app receiving Jetson Nano updates over Bluetooth.
- Built a synthetic dataset generator robust to camera glitches, motion blur, and object scale — expanding 100–200 source images to 80K and detecting objects as small as 10x10 px.

Stack | DeepStream, GStreamer, TensorRT, OpenCV, Docker, Flutter, AWS, PyTorch

## PROJECTS & OPEN SOURCE

- **ProjektDepth** — a custom DNN for monocular depth estimation and object segmentation; built a 1.2M-image dataset end to end and trained on TPU (PyTorch XLA) and Tesla P100 GPUs, with docs on Read the Docs.
- **TheTensorClan** — a PyTorch training framework exposing a simple API to plug in models, losses, datasets, and transforms for fast DNN experimentation.
- **LLVM Compiler** — a compiler built from scratch with an LLVM backend and flex++/bison++ front end in modern C++ (STL, C++14), with GitHub CI/CD for builds and tests.
- **KrishIAI** — a plant-disease detection app (HACKxRUAS winner) running TFLite models on Raspberry Pi drones for automated detection and pesticide spray.

## SKILLS

Languages | Python, C/C++, JavaScript, TypeScript, Java, Haskell, Go

ML & Deep Learning | PyTorch, PyTorch3D, HuggingFace, TensorRT, DeepStream, vLLM, PEFT/LoRA, Stable Diffusion/SDXL, LlamaIndex, LangChain

3D & Vision | SLAM, 3D Reconstruction, Point Clouds (PCL, Open3D, CloudCompare, MeshLab), Blender (BPY), THREE.js, OpenCV

MLOps & Cloud | Docker, Kubernetes (EKS/ECS), KServe, Kubeflow, TorchServe, ISTIO, AWS (Lambda, SageMaker, S3, Kinesis, EC2, ECR, EFS), Azure, Prometheus, Grafana

Backend & Systems | FastAPI, gRPC, Redis, Kafka, RabbitMQ, WebRTC, ROS1, Hydra

Frontend & Mobile | React, TailwindCSS, Flutter

## EDUCATION

### B.Tech, Computer Science & Engineering

Aug 2017 – Mar 2021

*Ramaiah University of Applied Sciences, Bangalore*

CGPA 9.78/10 • Silver Medalist

**Relevant coursework:** Object-Oriented Programming, Databases, Discrete Mathematics, Data Structures & Algorithms, Operating Systems, Computer Networks, Machine Learning, Data Mining, Advanced Data Structures & Algorithms, Information Retrieval, Image Processing.