REZOWAN SARKAR

AI, Computer Vision & XR Engineer

Phone: +60 11-2502 6612
Email: rsarkar.pro@gmail.com
Location: Putrajaya, Malaysia
Portfolio: imrizo.github.io
LinkedIn: in/imriz1
GitHub: github.com/ImRIzo



Profile

AI and computer vision researcher with four years of industry experience in AR/VR, digital twins and game development. Works across the full pipeline, from data collection and model development to real-time deployment on edge NPUs and Unity. MSc (Research) student and Graduate Research Assistant at UNITEN.

Expertise & Skills

Expertise: Computer Vision, Deep Learning, Edge AI Deployment, LLM Agents, XR/AR/VR, Digital Twins

Programming: Python, C#, C++

AI / CV: PyTorch, YOLOv8, OpenCV, ONNX, Qualcomm QNN (INT8 quantization, NPU inference)

XR / 3D: Unity 3D, URP, Oculus Quest, Vuforia, Photon, Leap Motion, MS Kinect

Tools: Qt, ROS 2, Git, Linux, FFmpeg, MQTT

Research

RGB-Based Ganoderma Detection in Oil Palm: Leakage-Aware Evaluation and Edge AI Deployment

Journal article — *Under review – IEEE Access*

- Collected and curated an RGB dataset of healthy and Ganoderma-infected oil palms.
- Developed YOLOv8 detection models with leakage-aware data splitting and evaluation.
- Ran INT8-quantized inference on the Qualcomm QCS6490 NPU (Radxa Dragon Q6A).
- Tested and analyzed on-device accuracy, energy consumption,latency and throughput (CPU vs. NPU).
- Built a drone-view simulator streaming aerial footage over RTSP for UAV-like testing.

Lightweight YOLOv8n Detection of Ganoderma Basal Stem Rot in Oil Palm Using RGB Images

Conference paper — *SCOReD 2026*

- Prepared and annotated RGB images of oil palm basal stem rot (BSR).
- Trained and tuned a lightweight YOLOv8n detector for low-cost hardware.
- Evaluated precision, recall and mAP for field screening.

Professional Experience

Graduate Research Assistant — *UNITEN* — Putrajaya, Malaysia

15 April 2026 – Present

Project: *Low-Cost AI for Early Detection of Oil Palm Diseases: A Computer Vision Approach Using Public and Collaborative Datasets*

- Research on low-cost computer vision for oil palm disease detection (see Research).

Software Engineer — *Surbana Jurong Group* Singapore
9 September 2024 - 31 October 2025

- Developed Unity-based Digital Twin systems, including the Digital Twin of **Changi Naval Base**, Singapore.
- Contributed UI Toolkit support to the open-source Unity Web Browser project: UnityWebBrowser-UI-ToolKit
- Built an Android app in Unity that sends control commands to the Digital Twin over MQTT.

Xperience Engineer — *Singularity Limited* Dhaka, Bangladesh
14 December 2020 - 31 October 2023

- Developed video games and XR applications (URP, Oculus Quest, Vuforia, Photon), including profiling and performance optimization.
- Built a Bangla letter recognition system with OpenCV for the educational game Bangla Iskool (banglaiskool.com).
- Developed AR/VR projects, including Tika AR Mural, the first AR mural in Bangladesh, built for the Turkish Embassy.
- Built multiplayer features with Photon Engine for Runner Metaverse: login, avatar creation, free roaming, and text and voice chat.
- Worked on computer vision projects, including hand and body recognition systems.

Education

MSc Information Technology (Research) 2026 - Present
Universiti Tenaga Nasional (UNITEN) Putrajaya, Malaysia
Thesis: *"Biologically Validated Synthetic Crop Disease Image Generation Using Severity Conditioned GANs for Agricultural AI"*

BSc Computer Science and Engineering (CGPA: 3.05/4.00) 2015 - 2020
International University of Business Agriculture and Technology Dhaka, Bangladesh
Thesis: *"Potato Leaf Disease Detection Using Computer Vision"*

Projects

> **Embodied AI Drone** - Unity drone simulation driven by a local Qwen2.5-7B LLM agent that turns natural-language tasks into action sequences, demonstrated on autonomous fire detection and response. details | demo

> **CS-ISR** - Unity tool that turns a natural-language prompt into a playable construction-site safety training scenario, using an LLM (DeepSeek) to plan, validate and build the site. repository

> **onnx2qnn** - ONNX-to-QNN conversion script for deploying INT8-quantized YOLOv8 models on Qualcomm NPUs. repository

> **YOLOv8 Inference on Radxa Dragon Q6A NPU** - Real-time C++ YOLOv8 detection on the QCS6490 Hexagon NPU with FPS/latency benchmarking and mAP evaluation; detects Ganoderma at ~21 ms/frame (mAP@0.5: 0.70, INT8). repository

> **DroneView Simulator** - Metal-based viewer that simulates a drone's aerial camera and streams it over RTSP (FFmpeg, MediaMTX) to test computer vision pipelines. repository

Awards

Employee of the Quarter, Singularity Limited - recognised for outstanding performance. Link

Languages

English - IELTS 7.0 (expired), **Bengali** - Native