

Jonathan Jesni Manissery

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EDUCATION

Indian School Muscat, *Higher Secondary Education (CBSE)* 05/2023 | Muscat, Oman
Completed Higher Secondary Education under the CBSE curriculum.

Indian Institute of Information Technology Pune, 05/2027 | Pune, India
Bachelor of Technology (B.Tech)
Undergraduate student in Computer Science with a focus on core computing concepts.

PROJECTS

Modified Double U-Net: Multi-Class Medical Image Segmentation,

B.Tech Project | PyTorch, Deep Learning, Medical Imaging, Computer Vision

- Designed a dual-stacked U-Net for 3-class medical segmentation (Background, Benign, Malignant).
- Developed an Ensemble Encoder fusing VGG-19, DenseNet-121, and Xception backbones for enhanced feature extraction.
- Integrated Softmax-based Attention Gates to pass class-aware spatial cues between networks, refining boundary precision.
- Optimized performance via Automatic Mixed Precision (AMP) and persistent workers, accelerating training by ~25%.
- Achieved ~0.85 Validation F1-Score using a Combined Loss (Cross-Entropy + Multi-Class Dice) to handle severe class imbalance.

Ludex: Hybrid Game Recommendation System,

B.Tech Project | Machine Learning, Recommender Systems

- Built a hybrid recommendation system combining content-based filtering and collaborative filtering
- Improved recommendation relevance by ~12–18% compared to standalone content-based filtering
- Applied diversity-aware re-ranking to increase catalog coverage by ~20%, reducing popularity bias
- Handled cold-start scenarios for new users using metadata-driven fallback logic
- Evaluated recommendations on large-scale Steam user–game interaction data using offline metrics

SynthRescue: Autonomous AI Triage & Synthetic Data Engine,

Hack2skill Solution Challenge | PyTorch, YOLOv8, Computer Vision, Python, Google Cloud, Next.js, FastAPI

- Engineered a procedural 3D data pipeline (Blender Python API) to simulate heavily occluded disaster environments, automating YOLO bounding-box annotations.
- Trained a custom YOLOv8 vision model on ~6,115 unified images, achieving 96.7% precision by implementing negative-sample reinforcement to eliminate false positives.
- Developed a full-stack dashboard (Next.js, FastAPI, Docker, Google Cloud) using Gemini AI to translate live drone telemetry into actionable emergency dispatch reports.

SKILLS

Languages & Frameworks: — Python, Java, C/C++, Dart, Flask, Flutter

Tools & Systems: — PyTorch, TensorFlow, Keras, OpenCV, NumPy, Pandas, Blender, GPU Computing

AI / Machine Learning: — Deep Learning (CNN), Computer Vision, Recommender Systems, Object Detection (YOLO), Semantic Segmentation

Frontend Development — React.js, JavaScript (ES6+), HTML5, CSS3, Tailwind CSS.