Immanuel S S

Github | Portfolio Website

Location: Dubai,UAE
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Motivated and dedicated developer with a solid background in programming, eager to apply skills in software development to create innovative solutions. Passionate about exploring natural language processing (NLP), augmented reality (AR), virtual reality (VR), and cybersecurity technologies, with a keen interest in contributing to advancements in these fields. Seeking opportunities to expand knowledge and make meaningful contributions to projects in NLP, AR, VR, cybersecurity, and other emerging technologies.

Technical Skills

Languages	:	C, C++, Java, Python, HTML, CSS, assembly, Kotlin, JavaScript
Engines	:	Unreal Engine, Unity
Softwares	:	Blender, Premiere Pro, DaVinci Resolve, Audacity
Dev Tools	:	Visual Studio, Rider, Visual Studio Code, Android Studio

Projects

ROS2 Agentic Fetch Robot Source Code

- Developed an agentic AI system that interprets natural-language voice commands and autonomously orchestrates a ROS2 mobile manipulator to locate and retrieve objects in a Gazebo simulation.
- Integrated a YOLO11 object detection pipeline with monocular camera-based 3D localization (no depth camera), feeding detections into a Groq Llama-3.3-70B LLM agent (LangGraph) that dynamically plans and executes multi-step pick-and-place tasks under an event-driven control loop.
- Implemented SLAM-based autonomous mapping and fault-tolerant navigation using a bisect-retry strategy — recursively halving the path on failure to preserve partial progress — built on a modular ROS2 architecture with Nav2 and MoveIt2 designed for portability across simulation environments.

On Screen Translator Source Code

- Built a real-time on-screen Korean-to-English translator that captures the display via DXcam (60 FPS), runs EasyOCR text detection/recognition on a CUDA GPU, and renders translated text as a transparent overlay aligned directly on top of the source window — entirely offline, no cloud APIs.
- Designed a producer-consumer pipeline with a detector thread, IoU-based frame-to-frame association, and a bounded OCR/translation queue; introduced a content-keyed translation cache that eliminates redundant model calls and keeps the hot path at detection speed.
- Integrated a locally hosted, quantized instruction-tuned LLM for context-aware translation of domain-specific terminology (wuxia/webnovel vocabulary), co-locating OCR and LLM inference on a single consumer GPU and resolving ambiguities that off-the-shelf neural MT systems mistranslate.

Credit Card Fraud Detection ML Model Source Code

- Developed a credit card fraud detection model using the Random Forest algorithm, leveraging its robustness for classification tasks.
- Addressed dataset limitations by implementing Synthetic Minority Over-sampling Technique (SMOTE) to handle imbalanced data and improve fraud detection.
- Achieved an F1 score of 0.88 on synthesized data, demonstrating the effectiveness of the machine learning model in accurately classifying data and handling imbalances.

Education

Birla Institute of Technology and Science Pilani Dubai, UAE
Bachelor of Engineering Computer Science *Sep 2022 – presently*

Achievements

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Experience

Unique World Robotics Dubai, UAE
Intern *June 2024 - August 2024*

- Led and actively participated in hands-on sessions using Arduino, Cretile, ESP32, and LEGO EV3, guiding 20 participants per session through automation and microcontroller-based projects.
- Designed and demonstrated 6 projects per day, incorporating sensor integration, basic automation, and microcontroller programming, simplifying complex STEM concepts into engaging, beginner-friendly formats.
- Presented smart home circuit ideas using Cretile kits (e.g., motion-sensor lights, temperature triggers), helping participants understand how fundamental circuitry maps to real-world IoT applications.
- Oversaw planning and execution of workshops, managing logistics, resource allocation, and session flow, while ensuring smooth hands-on experiences.
- Provided individual technical mentoring and troubleshooting support, balancing leadership with collaborative learning across a 6-member team.
- Gained practical familiarity with hardware setup, pin configurations, and real-world constraints of embedded systems.
- Received highly positive feedback from over 95% of participants, with many expressing satisfaction and enthusiasm for the sessions and projects.

White Paper Alliance IT Solutions Dubai, UAE
AI/ML Intern *August 2025 - January 2026*

- Reduced WhatsApp Chatbot agent latency by 50% by optimizing backend workflows.
- Built and debugged 5-language voice-to-text support, and handled testing + production fixes for chatbot–agent integration.
- Built a sports RAG chatbot using SQL and LangGraph, handling data collection, preprocessing, and schema design.
- Developed and integrated SQL-based retrieval workflows; later migrated to MongoDB and implemented a new RAG pipeline for NoSQL.
- Created a Streamlit demo UI and contributed to score projection logic for analytics features.
- Developed an ML-based video processing pipeline to perform seamless image overlay using object detection models.
- Collected and curated training data, and trained/tuned models to improve detection accuracy and overlay quality.
- Optimized model performance for more stable and realistic video outputs.
- Built fake news detection models using DistilBERT and regression techniques.
- Performed data preprocessing, training, and evaluation to enhance prediction accuracy.
- Implemented real-time face tracking using YOLO-based object detection.
- Developed hand tracking system using YOLO and MediaPipe for gesture/position detection.