BENJAMIN BRUCE

MACHINE LEARNING ENGINEER
+91 9486873341 **|** brucebeni2006@gmail.com |**Location:** Salem, Tamil Nadu, India
Github: Benjamin23-B **| Portfolio:** portfolio-pwu3.vercel.app

PROFILE SUMMARY

Dedicated Machine Learning Engineer with hands-on experience in architecting, training, and deploying end-to-end Computer Vision and Natural Language Processing pipelines. Adept in model optimization, real-time inference, and full-stack integration to build scalable, accessibility-focused solutions. Highly knowledgeable in developing deep learning architectures and engineering autonomous workflow automations for production-ready, scalable systems.

PROJECTS

DocAssister | RAG-Powered Intelligent Document Assistant (github.com/Benjamin23-B/Docassist)
Technologies: Python, PostgreSQL, OpenAI SDK, FastAPI and React.

- Engineered a Retrieval-Augmented Generation (RAG) system enabling semantic search, synthesis, and accurate question-answering across multi-format document collections.
- Implemented recursive text chunking and dense vector embeddings to optimize retrieval precision and minimize hallucination rates.
- Built multi-document indexing pipelines enabling simultaneous cross-referencing and grouped analysis from a single user query.

OpenAccess | Multi-Modal Assistive Learning Platform (openaccess.gces.net.in)
Technologies: Python, TensorFlow, OpenCV, MediaPipe, NLP.

- Architected an assistive learning ecosystem featuring voice-to-text transcription, camera-based real-time object narration, and text-to-sign-language synthesis for differently-abled students.
- Engineered an end-to-end translation pipeline mapping continuous speech and extracted text into structured sign-language video demonstrations.
- Integrated low-latency visual recognition models to narrate physical objects and classroom materials for visually impaired users.

HandScroll | Real-Time Touchless Gesture Interface (github.com/Benjamin23-B/Hand-scroll)
Technologies: Python, OpenCV, MediaPipe, PyAutoGUI, Tensorflow and Numpy.

- Developed a real-time computer vision system using 21-point hand landmark tracking to emulate mouse clicks, cursor navigation, and scrolling via webcam.
- Implemented exponential smoothing filters to eliminate landmark jitter, sustaining responsive cursor control at 30+ FPS without dedicated peripheral hardware.

TECHNICAL SKILLS

- **PROGRAMMING LANGUAGES -** Python, Java and SQL.
- **FRAMEWORKS & LIBRARIES -** Tensorflow, Keras, Scikit-learn, OpenCV, MediaPipe, Numpy and Pandas.
- **AUTOMATION -** LangChain, AI agents, PyAutoGUI and CI/CD for ML.
- **DEVELOPER TOOLS & CLOUD -** Git, GitHub, Docker, Linux, Hugging Face, Kaggle and GCP.

EDUCATION

Government College of Engineering Srirangam, Tiruchirapalli
B.E. Computer Science and Engineering |CGPA 7.4/10| Expected 2027.