Abhay Jagannath

+91-8790500333 jagannathabhay@gmail.com abhay-jagannath

ABOUT ME

ML engineer with a background in electronics, Experienced in building lightweight ML solutions. Looking for opportunities entailing innovative research, hands-on prototyping and, optimized large-scale deployment.

EXPERIENCE

DeepEdge AI **05 2024 – Present**
Machine Learning Engineer *Hyderabad, India*

- Developing backend microservices and infrastructure for the DeepEdge Platform SaaS. Key Skills: **PyTorch, Tensorflow, FastAPI, MongoDB, AWS, Docker, Redis**
- Developed and optimized new AMP training and Inference methods for **Image Similarity** and **Multiple Object Tracking** (DeepSORT) on the Platform.
- Implemented server-side user session tracking and activity logging, enabling personalized user experiences, session persistence, and enhanced analytics on the Platform.
- Led development of a Visual Inspection prototype for AI-driven monitoring of industrial layouts via real-time edge inference; optimized deployment of CNN and Transformer based Vision and audio models through format conversion and quantization tailored for edge resource constraints.
- Engineered a custom MQTT + TLS IoT layer enabling low-latency telemetry and live inference streaming through a GStreamer-based Edge SDK; designed scalable data pipelines, an optimal REST API, the on boarding UX, and worked closely with integration with front-end using Figma.

DeepEdge AI **11 2023 – 05 2024**
Machine Learning Intern *Hyderabad, India*

- Contributed to the integration of vision-based ML models on the platform, worked on improving the platform capabilities for dataset **analytics** and **metrics** for model training and evaluation on Ambarella edge devices.
- Improved the AI-Assisted annotation feature for the Platform's Data Labeling tool by eliminating redundancies related to model and input setup, speeding up the tool loading time by 30%.
- Built a multi-region synchronous and dataset and model marketplace feature to enable the Deepedge platform SaaS scalability across deployments on AWS.

Texas Instruments **08 2022 – 12 2022**
Digital Design Intern *Bengaluru, India*

- Worked with the Hardware Connectivity **Design Verification** team to build an automated python framework for **Sanity Testing** via UVM on Intellectual Property Cores and cross IP interconnectivty at the System on chip level.

Redpine Signals **06 2021 – 08 2021**
Summer Research Intern *Hyderabad, India*

- Undertook an academic survey as groundwork research for the team. Explored novel open-source strategies for **3D interlayer FPGA architectures** and unified **Embedded FPGA** design-to-implementation frameworks.

SKILLS

Machine Learning: PyTorch, Tensorflow, ONNX, Keras, OpenCV, Huggingface, Ollama, Langchain
Cloud and Software: Docker, FastAPI, Redis, Git, AWS Cloud, MongoDB, PostgreSQL
Languages: Python, C/C++, Java, Linux/Unix, LaTeX, SQL
Spoken Languages: English, French, Hindi, Telugu

EDUCATION

Birla Institute of Technology and Sciences, Pilani, Hyderabad Campus **08 2019 – 08 2023**
B.E. Electronics and Instrumentation Engineering - ***CGPA - 8.02*** *Hyderabad, India*

- **Relevant coursework:** Machine Learning, Reinforcement Learning, Operating Systems Computer Architecture, Microprocessor Interfacing, Control systems, Digital Design

PROJECTS

Deep-RL Based Overtaking for an Autonomous Vehicle — 08 2021 - 12 2021

- Developed an autonomous overtaking policy using Deep Deterministic Policy Gradients (DDPG) with Curriculum Learning in the Gym-TORCS racing simulator, on a 65-dimensional sensory state vector input (velocity, wheel RPM, opponent distance).
- Tuned exploration with Ornstein-Uhlenbeck noise and improved reward functions for overtaking and lane-keeping. Switched to NAdam optimizer, reducing convergence time by 65% (700 vs. 2000 episodes).
- Explored enhancements like prioritized experience replay and recurrent Q-networks, showcasing robust iterative debugging and analysis.

Detecting fake news using various ML Techniques — 02 2022 - 04 2022

- Built a baseline **Support Vector Machine** and **XGBoost** model for fake news detection using scikit-learn, The Supervised models were trained on truth values derived by **Parts of Speech tagging** texts from the LIAR-PLUS dataset.
- Evaluated ML methods including KNN, XGBoost, Decision Trees, RNNs, SVMs, and Naive Bayes using F1 score, accuracy, precision, and recall to determine their efficiency and suitability for the task.

Advancements in Physical Realization of Quantum Circuits — 08 2021 - 12 2021

- Proof of Concept study on improved quantum circuit realization to physical qubits. Using JKQ:QMAP, the team mapped the **Grover's Search Algorithm** on the IBM QX3 architecture with an improved efficiency.

2D Materials Based Photo-detectors for C-Band Photonics — 01 2022 - 05 2022

- Developed an Organic Material based 2D photo-detector sensitized with MoS_2 Quantum Dots.
- Explored Mode Analysis for Linear Waveguides on the COMSOL Multiphysics wave-optics Module.
- Studied the cross-section scattering of a Nano-Antenna by performing FDTD analysis on ANSYS Lumerical.

Implementation of a simple pipelined MIPS processor — 01 2023 - 04 2023

- Designed a 5 stage pipeline 32-bit MIPS processor **Verilog**; Simulated a testbench on **Xilinx Vivado** to test Control & Data hazard handling via stalls and data forwarding.

ONLINE COURSES

- 2023 Qiskit Global Summer School
- 2022 Qiskit Global Summer School on Quantum Simulation
- 2021 Qiskit Global Summer School on Quantum Machine Learning
- Google - The Bits and Bytes of Computer Networking
- IBM QxQ - Introduction To Quantum Computing

EXTRACURRICULARS

Undergraduate: The BPHC Quiz Club (*Secretary*), BPHC Ultimate Frisbee, Automation & Robotics Club , Literary Club, Foreign Languages Club

Other: Hyderabad Ultimate Frisbee, Citizens of Science (*Volunteer*)