PRAJWAL PRAKASH

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EDUCATION

Columbia University New York, NY
MS in Electrical Engineering (Conc: Data-Driven Analysis and Computation) Dec 2020
Coursework: Neural Networks & Deep Learning, Algorithms, Applied Deep Learning, Machine Learning, Reinforcement Learning, Leadership: Professional Development and Leader Fellowship; Teaching Assistant- Applied Deep Learning

PES University Bangalore, IN
BTech in Electronics & Communication Engineering June 2018

WORK EXPERIENCE

Cogniac Corporation San Jose, CA
Senior Machine Learning Engineer Feb 2022 - Present

Casino Gaming Vertical

- Developed a vision-powered, AI-automated player rating system at the **edge** across **100+** live Baccarat tables in Asia.
- Engineered end-to-end system for a smart blackjack table with vision pipeline, customizable game-state logic, dynamic side bets, and calibration workflows. Work contributed to **3 provisional patents**.
- Owned the DL stack for it with **Segmentation** card detection, **ViT-based** suit/rank classification, **YOLO-**based point-count model for chip detection, and **K-means** clustering for dynamic player-card association.
- Optimized the system to run 3+ tables per Cogniac Edgeflow edge device — **doubling revenue** from this client.
- Developed an **LLM-powered** post-game analytics dashboard — enabling pit bosses to place top-performing dealers on high-stakes tables, cutting fraud-related losses.

Manufacturing and Railway Vertical

- Architected a new segmentation pipeline into the Cogniac platform and fine-tuned models like **RF-DETR-Seg, SegFormer, ViT's, Segment Anything (SAM), DINO** on manufacturing inspection workflows, improving defect detection by 70%+ on targeted use cases.
- **Fine-Tuned** a **YOLACT** for real time crack detection in railways - helping a client achieve -**best safety record** in 2023.
- Built a **multi-agent**, **human-in-the-loop** annotation pipeline (as PoC) that offloaded routine labeling from annotators — cutting annotation time by 80% and improving label quality by 30% on 2 tested workflows.
- Architected platform-wide **PTQ - quantizing models** from FP32/FP16 to INT8 2x lower inference latency with no meaningful accuracy loss.

University of California, San Francisco San Francisco,CA
Data Scientist - (Dr. Ed Amorim Laboratory)

- Built a semantic **segmentation** based **UNet** model (with Mobilenet as Encoder) to detect the diameter of Iris and Pupil which acts as metrics to quantify the stage of dementia.
- Used PSPNet to get features from different resolution images and also worked on Multi task models to detect various biomarkers.

IntelinAir New York, NY
Computer Vision Intern
(Keywords: Weakly Supervised Learning, Bayesian Methods, Active Learning, AWS, Siamese Networks, UNet)

- Worked on Large scale pineapple flower counting from aerial images through **Deep Density Estimation** with UNet as a backbone and deployed the model utilizing AWS
- Performed Weakly Supervised learning by relative ranking of density approach to leverage power of unlabeled data

Detecting Cancerous Cells in Gigapixel Pathology Images

- Prepared dataset by preprocessing gigapixel pathology images at two different zoom levels and encoded preprocessed data on Inception V3 to get 2048 activations
- Developed decoder model by training it on these activations by backpropagating through **conv2D transpose** layer to get true mask; Achieved an accuracy of 94.71%

TECHNICAL SKILLS

- Programming: Python, C++, Matlab
- Tools & Software: PyTorch, TensorFlow, OpenCV, CoreML, ONNX, TensorRT, Google Agent Development Kit, Apache Spark, Hadoop, Proteus, Keil uVision, AVR Studio, Scilab LaTeX, SUMO, Git Protocols, GCP, AWS

PUBLICATION

- J Hobbs,Prajwal P, Robert P ,Harut H G P, Large Scale Pineapple Counting through Deep Density Estimation , Frontiers Journal - Artificial Intelligence Applications in Specialty Crops-2020. - https://doi.org/10.3389/fpls.2020.599705
- Won the best paper award for the conference paper titled "Real Time Traffic Management using RF Communication" URL: https://doi.org/10.1007/978-981-13-5802-9_72
- QoS Routing and Scheduling Algorithms in Multihop Wireless Networks: Proposed a novel algorithm which is an adaptation of OSPF algorithm to route both real and non-real time flows in the Multihop Wireless Networks to address the problem of QoS and packet scheduling. URL: https://doi.org/10.1007/978-3-030-03146-6_79