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Yashasvi Baweja

Machine Learning Engineer

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Focused software developer with hands-on experience in designing, enhancing and maintaining Python web applications & microservices on AWS cloud. Adept at building, training & deploying large scale machine learning models in PyTorch. Works well with teams and have experience owning end-to-end deliverables individually

EDUCATION

Johns Hopkins University (JHU) GPA: 3.9/4.0	Baltimore, MD
Master of Science (M.S) - <i>Electrical & Computer Engineering</i>	2019 - 2022
Indraprastha Institute of Information Technology (IIITD) GPA: 8.31/10.0	Delhi, India
Bachelor of Technology (B.Tech) - <i>Computer Science & Engineering</i>	2015 - 2019

SKILLS

Programming Languages	Machine Learning	Frameworks	Cloud(AWS)	Databases
<ul style="list-style-type: none">• Python, Bash• Java, SQL• C/C++	<ul style="list-style-type: none">• PyTorch, Tensorflow• NumPy, Pandas• OpenCV, Pillow• Jupyter, Scikit-learn	<ul style="list-style-type: none">• Flask, Django• Docker, Postman• VSCode, Debugger• Git	<ul style="list-style-type: none">• Lambda(Serverless)• CloudWatch• Amplify• CloudFormation	<ul style="list-style-type: none">• MySQL, PostgreSQL• MongoDB• DynamoDB(NoSQL)• AWS RDS, S3

EXPERIENCE

Python Developer / Data Platforms <i>CalaHealth Inc</i>	Sep 2022 — Present <i>Baltimore (Remote)</i>
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- Built a new microservice in patient portal which improved securing the registration over previous workflow
 - Deployed a serverless function in **AWS Lambda** to sync new user data from Salesforce in **DynamoDB**
 - Utilized **jwt token** to verify signature in API to improve upon previous un-authenticated routine
- Created a REST API routine to assist research team in analysing logs
 - Spin up an **AWS EC2** instance to run a **Flask** app accepting logs from device base station(s)
 - Improved security of server by manually setting **iptables** to allow only tcp connections on specific port
- Ideated and developed RESTful microservices for the Health Care Personnel (HCP) dashboard
 - Demonstrated the importance of HCP portal by building individual microservices in **Docker**
- Provided support to implement multiple APIs & fixing bugs reported in other microservices written in **Python**

MLE Intern / Model deployment <i>RIG Group Inc.</i>	May 2022 — Sep 2022 <i>Baltimore, MD</i>
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- Led the team discussions to architect and train a deep learning model to detect chest disease(s) in x-ray
- Helped translate technical results directly to the upper management by writing easy-to-read code in **Jupyter(Google Colab)**
 - Utilized expertise in **PyTorch** to train model on NIH chest x-ray dataset
 - Built confidence in model predictions by performing 5-fold cross validation with **90%+** mean accuracy
- Took lead initiative to build an application from research idea by putting the trained model on cloud
 - Deployed the trained model on **AWS EC2** using **Flask** micro-framework
 - Created **AWS APIGateway** to allow connections to EC2 on specific port from the web

Researcher / Face Anti-Spoofing <i>Vision(ECE) Lab, JHU</i>	Aug 2019 — May 2021 <i>Baltimore, MD</i>
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- Addressed challenge of detecting spoofs in face authentication videos using anomaly detection
 - Proposed a training framework with only real face data while detecting spoofs as anomalies
 - Reduced latency in algorithm by selecting only one image per 30 frames using **OpenCV**
 - Handled class imbalance in data by penalizing errors arising from under-sampled class
- *Published research at IJCB, 2020*
 - Received award for top 3 technical presentations

PUBLICATIONS

1. **Anomaly detection-based unknown face presentation attack detection**, Y. Baweja, P. Oza, P. Perera & V. M. Patel; at *International Joint Conference on Biometrics(IJCB)*, 2020
2. **Heterogeneity aware deep embedding for mobile periocular recognition**, R. Garg*, Y. Baweja*, S. Ghosh, R. Singh, M. Vatsa & N. Ratha; at *Biometrics: Theory, Applications and Systems(BTAS)*, 2018
3. **Comparison of Class Imbalance Techniques for Real-World Landslide Predictions**, K. Agrawal, Y. Baweja, (+8 authors) & V. Dutt; at *International Conference on Machine Learning and Data Science(ICLMDS)*, 2017

PROJECTS

Restaurant Hygeine classifier

JHU Baltimore, MD

- Analysed 2021 data from Open Portal to find the best restaurants in San Francisco based on hygiene
 - Perform feature engineering on columns like business-location, zipcode, inspection score to find best features
 - Compared Random Forest, Decision Tree, Neural Network, k-NN & SVM classifier over 10-fold cross validation
- Gained insights that location alone is not a good predictor for hygiene

Voice2Face

JHU Baltimore, MD

- Using Generative Adversarial Networks to create emotionally aware faces from voices
 - Implemented the paper "*Reconstructing faces from voices, Wen et. al*" in PyTorch
 - Added new auxiliary network which handles emotion along with speech signals

Periocular Recognition

IIITD New Delhi, India

- Developed a novel loss for training CNNs in presence of data from different modalities
- Extended Triplet Loss by adding two branches(spectrum/resolution) to account for heterogeneity
- *Published research at BTAS, 2018*
 - Achieved State-of-the-art(10% improvement in EER) for periocular recognition

Face recognition on golf carts

IIITD New Delhi, India

- Led R&D team in building face recognition system (written in Python) for Yamaha Research(Japan)
- Built a personalised greeting tool using Haar cascade for segmentation and LightCNN model for classification
- Enhanced content information over video frames using multiple score fusion techniques

Smart Glasses

IIITD New Delhi, India

- Created a Raspberry Pie based headset to aid visually challenged in reading text by using Tesseract OCR
- Wrote scripts to integrate text-to-speech software like eSpeak for the output produced from OCR
- Added functionality of Face recognition for familiar faces using OpenCV

Landslide Prediction System

Indian Institute of Technology Mandi, India

- Designed and assembled an Arduino based landslide prediction architecture
- Coded in C to periodically record sensor data like humidity, elevation & moisture
 - Configured a GSM module with the micro-controller to send site data to cloud
- Analysed the cloud data to predict the probability of landslide. Used previous years data for validation
 - Achieved minimum 96% accuracy across multiple classifiers like Logistic Regression, MLP, SVM & Random Forests

ACTIVITIES & AWARDS

- Recipient of 2019 Graduate Student Fellowship, ECE department, JHU
- Student mentor for Intl Conference: CVPR, 2022 (New Orleans, Louisiana)
- Project Showcase finalist (Smart Glasses), Mini-Maker Fair @ IIITD
- Reviewer for IEEE Transactions Journal on Image Processing, 2022
- Top 3 awardee for best presentation at IJCB, 2020
- Honors student (Grade 12) - Recipient of national recognition letter for academic performance

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