Madan Baduwal

Machine Learning Engineer

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SUMMARY

Machine learning engineer with 4+ years of experience in data engineering, data science, machine learning, deep learning, computer vision, natural language processing, generative AI, software engineering, and robotics. Key achievement: created a student status engine (i.e., FuseClassroom) for 60 colleges and 20k students in Nepal.

WORK EXPERIENCE

Matrice.ai **Nov 2022 – Feb 2023**

Sr.Machine Learning Engineer *Chicago*

- Designed and developed a no-code data-centric AI platform for building and deploying ML applications. Which reduces the deployment time by 40% while cutting the development cost by 80%.

BP Eye Foundation **May 2022 – Nov 2022**

Sr.Machine Learning & Computer Vision Engineer *Kathmandu, Nepal*

- Optimized semantic segmentation and detection algorithms for **otitis media** based on otoscopy images of the tympanic membrane with an accuracy of **85%** and deployed it as a scalable ML SAAS product on the Dell EMC server using the latest technologies of Django, React, Docker, Kubernetes, AWS, and CI/CD pipelines.

Fusemachines **Feb 2020 – Feb 2022**

Machine Learning Engineer *Headquater: New York*

- Led a team of engineers to develop an AI-enabled education platform: **fuseclassroom.com**, this platform was running around **60** colleges in Nepal, and **20k** students are already engaged in this platform.
- Worked on several client-based ML projects from the US as well as internal ML projects of the company in the field of Machine learning and **automated and optimized** these projects using MLOPS technologies DVC, MLflow, Github, Jenkins, Kubeflow, Apache Airflow, and Datadog.
- Involved in in-house training, workshops, math knowledge-sharing sessions, and paper reading sessions on deep learning.
- Democratized AI by doing research, design, review, and refinement of content - reading material, quizzes, assignments, and projects for Fusemachines **AI Education Programs** - "Micro Degree in Artificial Intelligence, Machine Learning, Computer Vision, Natural Language Processing"

National Innovation Center **Jan 2021 – Dec 2021**

Computer Vision Engineer(R & D) *Kathmandu, Nepal*

- Collaborated with mechanical, electrical, and electronic hardware teams for the deployment of computer vision(CV) tasks in robots to create initial prototypes for waiter and service **robots** within **9** months.
- Run simulation tests on docker and Gazebo, Integrated and deployed CV tasks in robots with **Edge Devices** like Tensor Processing Units and Jetson Nano, RaspberryPI.
- Created a few **rule base algorithms** from scratch using python3 to handle the motion and manipulation of the robot.
- Implemented several **CV tasks**: classification, Localization, Segmentation, Object Detection, Object Tracking, and Face Recognition using Pytorch. Worked on the whole computer vision pipeline.

Omnibluetech **Aug 2019 — Feb 2020**

Software Engineer Intern *Kathmandu, Nepal*

- Coded Django REST APIs and AWS-based background workers that can handle millions of daily requests, enabling third-party entities to extract data from unstructured documents in a scalable manner.
- Designed and developed **web applications** using Front-end technologies HTML5, CSS, Bootstrap, Javascript, and backend technologies Flask, Django, and WordPress.

EDUCATION

University Of Texas Permian Basin **Jan. 2023-Ongoing**

Master of Science in Computer Science(MSCS), ***GPA: 4/4*** *Texas, USA*

- **Area of focus:** Computer vision and Natural Language Processing
- **Relevant Courses:** Data Structure and Algorithm, Distributed System, Distributed Database System, Computer Network and Security

Tribhuvan University, Institute of Engineering **2015 – 2019**

Bachelors in Computer Engineering, ***Percentage: 72.38% Rank : 2/43*** *Kathmandu, Nepal*

- **Relevant Courses:** Artificial Intelligence, Data Structures and Algorithms, Image Processing & Pattern Recognition, Multimedia System, Big Data Technologies, Software Engineering, Probability and Statistics, Linear Algebra, Computer Organization & Architecture, Microprocessor, Computer Network, Operating System, C, C++

TECHNICAL SKILLS

Languages : Python3, C, C++, Java, JavaScript,C#, Bash, HTML/CSS, SQL
Python Packages : Numpy, Theano, Pandas, Matplotlib, Seaborn, Scikit-learn, XGBoost, Pytorch, Tensorflow, Hugging Face, Caffe, Opencv, NLTK, Scipy, Regex, BeautifulSoup, TVM, GLOW, XLA
Big Data and Databases : PostgreSQL, MySQL, MongoDB, Snowflake, Spark, Hadoop, Redshift, Databrick, Kafka,
Miscellaneous : AWS, Microservices, Tableau, Jupyter Notebook, ETL, Linux, Git, Github, Docker, Kubernetes, CI/CD, Jenkins, Mlflow, MLOps, Robot Operating System(ROS), Gazebo, Arduino, R.pi, C.TPU, J.Nano, Django, Flask, Fastapi

RESEARCH EXPERIENCE

University Of Texas Permian Basin **Odessa, Texas**
Graduate Assistant *Jan 2024 – Ongoing*

- Research on Multimodal Model

Undergraduate Student Assistant Editor *Mar 2023 – Ongoing*

- Assisting in the editing and proofreading of manuscripts for publication under the direction of Prof.Rebecca Babcock and Prof.Mohamed K Zobaa.

PUBLICATION

1. Prakash Ratna Prajapati, Samiksha Poudel,**Madan Baduwal**,S.,Burlakoti, S.,Pandey(Apr.2021). Signature Verification using Convolutional Neural Network and Autoencoder Journal of the Institute of Engineering ,16, No.1, pp.33–40

PROJECTS

Phishing Detection | *Python3,Scikit-learn,Git,Github,AWS,Docker,Kubernetes,CI/CD* **jun 2021 - Dec 2021**

- Classified websites into phishing and non-phishing using deep learning algorithms for **GoDaddy, Bitly, InfoBip, and ICANN under WMC global**.Transformed unstructured data into structured data format using **RegEx**.

Student Status Engine | *Python3,Snowflake,Scikit-learn,Git,AWS* **January 2021 - june 2021**

- Created **feature extractor pipeline** that automatically extracts features from the data warehouse(eg: snowflake). Applied machine learning algorithms on extracted features to classify student status into different classes.
- Collaborated with back-end, front-end, and DevOps engineers to test and **deployed model into large-scale production.**

AI-Robot |*Python3, TensorFlow 2.0, ROS,Gazebo,C.TPU,J. nano,R. Pi* **Jan 2021 – Sep 2021**

- Retrain a classification model for Edge TPU using post-training quantization(**23fps,85% mAP** score with pre-training), face recognition using python face recognization library, depth calculation using real sense depth camera, Centroid based object tracking, and write rule base algorithm from scratch.
- Integrated and tested computer vision tasks into ROS, gazebo simulation environment and **implemented it into waiter and service robot**. Visualize robot sensors data into rviz.

Text Extractor | *Jupyter Notebook,Python3,OpenCV* **July 2019 - October 2020**

- Research and experiment on building image preprocessing techniques like erosion and dilation.
- Build a Framework that uses google tesseract and regex to extract information from the form (eg: buyer name, seller name, etc.).

Hastakshar | *Python3,OpenCV,Keras,Django* **2018-2019**

- Research and experiment on Image Localization to improve classifier model(83 %) using NumPy and OpenCV library.
- Built signature verification CNN classifier system using Tensorflow and Django web interfaces in local machine.

Android apps and Websites | *C#,Unity,Python3,HTML,CSS* **2015 – 2019**

- Android apps : Asteroid Smash, Antigravity Ball , Saveme , Beat Creator, 1k downloads
- Web apps : horizonglobal.edu.np,youthcareer.edu.np: between 10,000 and 15,000 visitors per month

ACHIEVEMENTS AND AWARDS

Hackathon Runner-up **March 2018**

- 1st runner-up of hackathon organizes by Kathmandu University, kavre.The prize was worth $100.

Best Logic Code **July 2019**

- Best Logic Code winner organized by Sagarmatha engineering college.The prize was worth $60.

Tribhuvan University Merit-based scholarship **2015-2019**

- Awarded for securing the highest GPA in the Computer Engineering cohort in the 1rd, 2th and 4th semesters respectively. The scholarship was worth $ 1000 each semester.

Best Idea Winner **January 2017**

- Best idea winner of the Exhibition organized by Kantipur engineering college and sponsored by Neosphere. Neosphere offered 6 month Ethical Hacking course, which was nearly worth $ 200