



MADAN BADUWAL

Kathmandu, Nepal

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Experience

Fusemachines

Feb 2020 – Ongoing

Machine Learning Engineer Associate

Fusemachines Inc., New York, USA.

- **Led** a team of engineers to develop an **AI-enabled education platform with smart AI features** that provide a better online learning experience to student and faculty members name as **fuseclassroom.com**. Currently, this platform is running around **60** colleges in Nepal, **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. Working on the whole **Machine Learning pipeline**: data collection, data cleaning and pre-processing, model building, tuning hyperparameters, model training, and model evaluation and model deployment.
- Involved in-house training, workshops, math knowledge shearing session, and paper reading sessions on Deep Learning.
- Involved in **research**, design, review, and refinement of content - reading material, quizzes, assignments, and projects for Fusemachines AI Education Programs - “Machine learning”, “Micro Degree™ in Artificial Intelligence: Machine Learning, Computer Vision, Natural Language Processing”

National Innovation Center

Jan 2021 – Ongoing

Computer Vision Engineer (Researcher and Developer)

Kathmandu, Nepal

- Collaborated with mechanical, electrical, and electronic hardware teams, to create initial prototypes for waiter and service **Robot** within 9 months.
- Created few **rule base algorithms** from scratch to handle the motion and manipulation for the robot.
- Integrated and deployed computer vision tasks in robots with **Edge Devices** like Tensor Processing Units and Jetson Nano, RaspberryPI, docker, Gazebo. Reduced object detection time latency by 50% using coral TPU.
- Worked on several **computer vision tasks** : classification (From scratch in TensorFlow 2.0) , Localization, Segmentation, Object Detection (Using MobileNetSSD and YOLO), Object Tracking (Centroid Based), Face Recognition (From face recognition library and Face Recognition Using Azure Cognitive Services), and Image Captioning (fine tuning and pretraining of models). Working on the whole computer vision pipeline: data collection, data cleaning and preprocessing, model building, tuning hyperparameters, model training, model evaluation.

Omniblue-tech

Aug 2018 — Feb 2019

Software Engineering

Kathmandu, Nepal

- Worked on **data structured and algorithm** and different structured and unstructured database systems.
- Worked on designing and development of **web applications** using Front-end technology HTML5, CSS, Bootstrap, Javascript, and backend technology Flask, Django, and WordPress.

Publication

1. Prakash Ratna Prajapati, Samiksha Poudel, **Madan Baduwal**, Burlakoti, S., Pandey, S.P. (Apr. 2021). Signature verification using convolutional neural network and autoencoder. Journal of the Institute of Engineering, 16, No. 1, pp. 33–40

Projects

Student Status Engine | *Jupyter Notebook, Python3, Snowflake, Scikit-learn, GitHub, AWS*

January 2021 - June 2021

- Created feature extractor that automatically extract features from the data warehouse (eg: snowflake).
- Apply supervise and unsupervised algorithms to classify student status into different classes (eg: red, yellow, green).
- Collaborated with back-end engineer and front-end engineer to integrate the system.
- Test model into development and stage environment. Deployed model into the large-scale production environment.

Question Ranking | *Jupyter Notebook, Python3, Snowflake, Scikit-learn, TensorFlow 2.0, GitHub, AWS*

Jun 2021 - Sep 2021

- Applied different text pre-processing techniques, to preprocess millions of questions.
- Research and development embedding models to convert questions into vectors.
- Applied multiple classification algorithms to classify questions into different classes (eg: easy, medium, and difficult).
- Deployed best performing models in production. The model already predicted **millions** of questions.

Madan |  | *Python3, Cookiecutter, Poetry, Sphinx, Loguru, Dynaconf, Fire, Pytest, Git, Github, pip3*

January 2021 - Ongoing

- Madan is a free and open-source software library for machine learning. It can be used across a range of tasks but has a particular focus on training and inference of computer vision.
- To install and try: **pip install madan**

AI-based Autonomous Robot |  | *Python3, TensorFlow 2.0, ROS, Gazebo, TPU, J. nano, R. Pi* **January 2020 - Ongoing**

- Integrated computer vision tasks with robots.
- Implemented different algorithms in robot : Lane tracking algorithms to track the lane, and object detection algorithms detect the objects in front of it. Rule-based algorithms make decisions for the robot.

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

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

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

- Research and experiment on image pre-processing techniques including grayscaling, noise reduction, resizing, etc using NumPy and OpenCV library.
- Offline signature verification system using CNN (Keras Tensorflow). Developed in Django with web interfaces.

Asteroid Smash | *C#, Unity* **2015-2016**

- Implementation of reinforcement learning using ML-Agents to train enemy ship.

Websites and Android apps(with links) **2015 – 2019**

- Design and develop websites and app for clients using different frameworks(web frameworks , Unity engine).
- Web app Samples : horizonglobal.edu.np, youthcareer.edu.np
- Android app Samples: **Antigravity Ball**

Honors and Awards

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

- Awarded for securing the highest GPA in the Computer Engineering cohort in the 1st, 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

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.

Education

EDUCATION **2015 — 2019**

Bachelors in Computer Engineering *Kathmandu, Nepal*

- **CGPA:** 3.3/4

Certifications

- Certified Ethical Hacking (CEH) - Neosphere
- Neural Networks and Deep Learning - Coursera
- Sequence Model - Coursera
- Effective Client Communication - Fusemachines

Extra Activities

- Lite Exhibition Participant, Kantipur Engineering College, 2015,2016,2017,2018
- Himalaya Exhibition (HEx) Participant, Himalay College of Engineering, 2017
- AI Workshop Participant , MPercept Technology Pvt , 2019
- Data Science Workshop Participant, F1Soft International Pvt. Ltd., 2019

Technical Skills

Languages: Python3, C,C++,Android, HTML/CSS, SQL,PostgreSQL, MySQL

Tools: Scipy,Numpy,Pandas,Matplotlib,Scikit-learn,Tensorflow,Opencv,NLTK,Jupyter Notebook,Conda

Familiar with: Latex,Linux,Mongodb,Git,Github,Docker,Django/MVT, Flask,Mlflow,Robot Operating System(ROS),Raspberry pi,Coral TPU,Unity game engine,Networking,SEO,Wordpress