Sangam Man Buddhacharya

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Dedicated and competent learner, willing to solve real-world problems using data, computer vision, and machine learning. Good leadership skills with creative problem-solving abilities. Passionate engineer and thriving analyst with the ability to work with lots of images, and apply different computer vision, and ML algorithms. Possess a strong background in machine learning, computer vision, databases, mathematics, and statistics, looking to emerge as a computer vision engineer.

EDUCATION

Institute of Engineering, Pulchowk Campus Tribhuvan University, Nepal
Bachelor of Engineering in Electronics and Communication (Aggregate: 81%, Top 1% in university) [2016] - [2021]

HARD SKILLS

Programming Languages
Python, C, C++, Matlab

Tools
GitHub, Linux, AWS, Excel

Database
MySQL, NoSQL, MonogoDB, PostgreSQL

Knowledge
Probability and statistics, Linear Algebra, ML, DL, CV, MLOps

Backend
Django, Flask, FastApi

Frameworks and APIs
NumPy, Scikit-learn, TensorFlow, Keras, PyTorch, Matplotlib, OpenCV, Open3D, Pandas, SciPy, Seaborn, SFML, OpenGL

SOFT SKILLS

- **Problem solving**
- **Creativity**
- **Strong Work Ethic**
- **Teamwork**
- **Adaptability**
- **Leadership**
- **Communication**
- **Punctuality**
- **Perseverance**

EXPERIENCE

Artlabs New York, United States
Machine Learning Engineer 4th April [2022] - 3rd Oct [2022]

- Developed an automatic UV wrapping tool for the RendezVerse client to help the 3D designer. The tool reduced the manual UV mapping process by 30%. Designed the 3D reconstruction pipeline to create the 3D mesh of the room using a series of RGB and depth maps. Reconstructed 3D mesh increased the efficiency of the modeler in making the 3D structure of the room.
- Built the content-based music recommendation system for TrakTrain client which increased top-10 accuracy from 37% to 63%.

Selcouth Technology Bharatpur, Chitwan, Nepal
Computer Vision Engineer 1st Sep [2021] - 15th March [2022]

- Built a computer vision pipeline to recommend Flipkart ads similar to the clothes from movies and short videos. It increased the approved rate from the Sharechat (MoJ) client from 40% to 89% within 4 months.
- Designed a frame selection algorithm to select only the important frames from the video where the clothes are less occluded. The frame selection algorithm helped to decrease the false acceptance rate (FRR) and increased the image retrieval accuracy.
- Applied a human tracking system to track the time frame of different people who appeared in the video. This approach solved finding the main characters and recommending a unique set of clothes.
- Worked on object detection, background removal, clothes color detection, hyper-parameter tuning, training deep learning models, and data preparation.

Deerwalk Sifal, Kathmandu, Nepal
Associate Data Engineer 10th May [2021] - 29th Aug [2021]

- Developed algorithms to transform data into useful, actionable information. Interpreted and analyzed data using statistical techniques. Standardized the data from several data sources by mapping fields into a common schema, matching member information across data sources, and standardizing vocabulary.

ASMI Mahalaxmisthan, Lalitpur, Nepal
Machine Learning Engineer (Freelancer) 8th Jan [2020] - 20th Nov [2020]

- Collected data from different sensors in a smartphone and hand-engineered to select required features.
- Developed an ML model to filter data and designed a CNN model to classify legitimate from an intruder.
- Deployed the model developed using django on AWS.

LOCUS Pulchowk, Lalitpur, Nepal
Hardware Coordinator 10th Sep [2019] - 20th Dec [2020]

- Successfully organized and planned hardware events, robot war competitions (RoboWarz), drone racing competitions (Dronacharya), and balloon-popping robot competitions (RoboPop). Conducted 3 days of Locus 2020 national-level project competition where more than 120 teams participated. Arranged sponsorship for hardware events and was able to collect about $8695.65 budget.

Sakura Science Exchange Program Kisarazu, Chiba, Japan
Sakura Science Club Member 16th Dec [2019] - 23rd Dec [2019]

- Attended a seminar on emerging technologies such as Artificial Intelligence, Internet of Things (IoT), etc, conducted by the companies like “OMRON”. Learned to convert a problem into an opportunity by providing the solution and establishing a start-up company. Surveyed the advanced IoT technologies used in different industries.
- Presented poster at International Workshop on Effective Engineering Education(IWEEE-5)

PROJECTS

Automatic UV Wrapping Tool July [2022] - Sept [2022]
Artlabs (Machine Learning Engineer)

- Wrapping the best appropriate texture from all possible images to a 3D mesh mitigating the modeler's burden for searching, cropping (using Photoshop), or aligning the image with a 2D UV map.
- Technologies used: Image segmentation, Image Classification, Homographic transformations, Image painting, Image blending, Linux, Python, Open3D, OpenCV, Tensorflow, Scikit-Learn, Meshlab

3D Reconstruction of Apartment April [2022] - July [2022]
Artlabs (Machine learning Engineer)

- Full 3D reconstruction of the apartment using a series of RGB and depth maps.
- Technologies used: COLMAP, SIFT algorithm, Neural Radiance Field(NeRF), Nice-Slam, Open3D, Tensorflow imageio, matplotlib, C++, Python

Video to Online shopping / Video E-commerce Sept [2021] - March [2022]
Selcouth Technology (Computer Vision Engineer)

- Matched the clothes from MoJ, TikTok videos, and movies to similar items in an online shop (Flipkart and Amazon). Similar (category, color, pattern) product ads as video items were recommended from an online shop. Deployed docker image to Amazon ECS.
- Technologies used: Object Detection, Object Classification, Human Tracking, Siamese Network, Pose estimation, Background removal, Color detection, CNN, AWS, K-Means, XGBoost, Python, PyTorch, TensorFlow, Open-CV, NumPy, SciPy.

Continuous Authentication of Smartphone based on Human Behavioral Patterns
ASMI (Machine Learning Engineer Freelancer) March [2020] - Nov [2020]

- Designed a machine learning pipeline to predict legitimate or intruders from human behavioral patterns using continuous mobile sensors (accelerometer and gyroscope). Deployed pipeline in AWS server.
- Technologies used: Smartphone accelerometer, gyroscope, 1D-CNN, Signal processing, Xgboost, Feature selection, Python, TensorFlow, Pandas, NumPy, tsfel.

Arrhythmia Prediction using Convolutional Neural Network Aug [2019] - Dec [2019]
Personal Project, Computer Vision

- Designed a 2D-CNN classification model to classify seven different types of Arrhythmia.
- Technologies used: AD8232 ECG sensor, Arduino, CNN, Python, Scikit-learn, Keras, Numpy.

Tomato Plant Disease Classification using Deep-learning Jan [2019] - May [2019]
Competition Project, LOCUS 2019 (Winner), Computer Vision

- Detected the tomato plants using the YOLOv2 object detection model, extracted the leaves from the plant, applied different filtering techniques to remove the noise from the leaf images, and classified 10 different diseases using a customized VGG-16 classification model.
- Technologies used: Object Detection (YOLOv2), Object Classification (VGG-16), Image Filtering, Python, TensorFlow, Keras, Open-CV, NumPy.

Chess Board Tracker Feb [2018] - Aug [2018]
Competition Project, LOCUS 2018 (Winner), Computer Vision

- Implemented the haar cascade algorithm to find the corners of squares. Used image subtraction and blob detection algorithms to find the initial and final position of the pieces. Performed image filtering to remove noises like shadow and lighting. Used hand detection to signal the move completion.
- Technologies used: Mobile Camera, Haar cascade algorithm, Blob detection, Hand detection, Image subtraction, OpenCV, Numpy, C++, SFML

PUBLICATIONS

Sangam Man Buddhacharya, Sagar Adhikari, and Ram Krishna Lamichhane, "Fashion Image Retrieval based on Parallel Branched Attention Network". *International Journal of Advanced Computer Science and Applications (IJACSA) 13(8): 821-829. http://dx.doi.org/10.14569/IJACSA.2022.0130895*

Sangam Man Buddhacharya, Rabin Adhikari, Nischal Maharjan, and Sanjeeb Prasad Panday, "Monocular Depth Estimation using a Multi-grid Attention-based Model". *Journal of Innovative Image Processing (JIIP) 4(3): 127-146. http://dx.doi.org/10.36548/jiip.2022.3.001*

Sangam Man Buddhacharya, and Nishesh Awale, "CNN-Based Continous authentication of Smartphone using Mobile Sensors". *International Journal of Innovative Research in Advanced Engineering 9(8): 361–369.http://dx.doi.org/10.26562/ijirae.2022.v0908.37*

HONORS & AWARDS

Locus 2019 Instrumentation (Winner) [2019]

Locus 2018 Open Hardware (Winner) [2018]

Sirjana-The Innovation (Winner) [2019]

AT-Hackathon (2nd Runner up) [2018]

ONLINE CERTIFICATES

Databases and SQL for Data Science with Python
HXBMQEJKFWHQ

Python for Data Science, AI & Development
8MWTPM47FPFX

Fundamentals of Reinforcement Learning
M3SWJ4EEWTRF

Convolutional Neural Networks
EE9B9HUTVMMD

Prediction and Control with Function Approximation
8HC7EKKETXZE

Robotics: Perception
XCKTW4TTLNE3

Build Basic Generative Adversarial Networks (GANs)
8TNGDUTHAJWB

Sample-based Learning Methods
JZ5YAFTEQ4NJ

Sequence Models
MFEZWC2JGPEK