

Diwas Pandey

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Recent Master's in Computer Science Graduate with 4+ year of experience in Artificial Intelligence, Computer Vision & Deep Learning

Education

M.S. in Computer Science | Washington State University

SALMON CREEK, WASHINGTON

08/2022 - 05/2024

- GPA: 4.00
- Worked as Graduate Research assistant & Graduate Teaching assistant
- Relevant Courses: Artificial Intelligence, Machine Learning, Neural Network, Computer Vision, Wireless Sensor Networks

B.E. in Computer Engineering | Tribhuvan University, Nepal

KATHMANDU, NEPAL

10/2016 - 05/2021

- Achieved the highest national ranking & awarded a full scholarship (2016-2021).
- Capstone Project I: Real-Time Number Plate Recognition System using Computer Vision
- Capstone Project II: Doodle to Photorealistic Traditional Image Generation using Gau-GAN

Experience

Graduate Research Assistant

WASHINGTON STATE UNIVERSITY | SALMON CREEK, WASHINGTON

08/2022 - Present

- Thesis: **Unlocking Identity: Robust Individual Identification through Electrocardiogram Analysis** using AI
- Submitted a paper for the project, currently awaiting approval
- Led research to create a new biometric authentication method using ECG data, covering AI, cybersecurity, & biomedical areas.
- Conducted thorough literature reviews on ECG research and implemented relevant papers for biometric authentication
- Developed and refined PyTorch deep learning models, creating a custom ECG data augmentation algorithm.

Team Lead, Machine Learning Engineer Level II

BOTTLE TECHNOLOGY, PVT. LTD. | JHANSIKHEL, LALITPUR NEPAL

11/2020 - 06/2022

- Led project team in automating KYC process for brokerage firm using OCR and computer vision
- Led research team to implement Smart Advertisement system in Kathmandu, using pedestrian and vehicle detection
- Developed & Released '**Nepali-to-Roman**' PyPI package, facilitating Nepali to English conversion for OCR, Achieved 18k+ downloads (Open-Source contribution)
- Developed Image Alignment, OCR, and Transliteration modules API, deployed on EC2 and Docker, emphasizing MLOPS practices

Machine Learning Engineer Level I

BOTTLE TECHNOLOGY, PVT. LTD. | JHANSIKHEL, LALITPUR NEPAL

11/2020 - 06/2022

- Implemented a custom-trained YOLO model for vehicle recognition, including vehicle counting and license plate detection
- Collected, preprocessed, and aligned a dataset of 500,000+ citizenship records for OCR and image processing
- OCR Tools Research: Researched Pytesseract, NanoNets, EasyOCR, AWS Textract, and AWS Rekognition for OCR solutions
- Developed an OCR model for Nepali citizenship documents, incorporating NER and supporting Devanagari and English scripts
- Created APIs for fingerprint extraction and BIOD PDF extraction to streamline biometric and document data processing

Founder Admin & Content Writer

AIHUBPROJECTS.COM

11/2019 - Present

- Authored a book on Machine Learning algorithms and Python with scratch implementations
- Authored engaging tutorials covering Python, Machine Learning, Natural Language Processing, and Computer Vision, captivating learners with practical insights and techniques
- Partnered with organizers of both national and international hackathons, providing mentorship to participants & contributing to the overall success of the events

Top Freelance Machine Learning Projects

Research : Watersheds Extraction From Satellite Images Using Attention U-Net

USED PYTHON, OPENCV, U-NET, AND ATTENTION U-NET ON 18,000+ SATELLITE IMAGES

- Conducted research on watershed extraction using Attention U-Net and developed a balanced augmentation-based deep learning method
- Utilized Sentinel-2 satellite photos for the dataset, improving accuracy and computational efficiency
- Project contributes to environmental assessment, monitoring changes due to global warming, and identifying water pollution sources

Fake License Plate Generation (For Japanese Company)

PYTHON, OPENCV, GAN | GENERATED ANNOTATED LICENSE PLATE IMAGES USING GANS

- Utilized Generative Adversarial Networks (GANs) to generate and augment annotated license plate images
- Implemented YOLO for vehicle detection, utilized ROI for License Plate cropping, and applied Mean-SD for character segmentation

Emotional state Classification from EEG Data (For Australian Company)

ALGORITHM USED: RANDOM FOREST, CNN, LSTM, RNN

- Executed thorough data cleaning, proficiently visualized insights, and applied data augmentation techniques on EEG dataset
- Achieved an 85% accuracy rate on Recurrent Neural Network (RNN) and recommended it as the optimal choice.

Facial Attendance System with Mask Detection (For Indonesian Company)

TOOLS & ALGORITHM: COMPUTER VISION, DEEP LEARNING (CNN), PYTORCH DOCKER

- Created a system that detects the presence of face masks and permits entry into the office premises exclusively for employees wearing masks
- Enhanced the system's functionality to track attendance even when employees wear masks
- Deployed the system within Docker containers and remotely installed and monitored its operation to ensure continuous functionality

Technical Proficiencies

Programming Language	Python, C++
AI Tools	PyTorch, OpenCV, Scikit-learn, Numpy, Pandas, Matplotlib
Expertise	Computer Vision, Deep Learning, Machine Learning Algorithms
AWS Services	EC2, S3, Sagemaker, AWS Rekognition, AWS Lambda
IDE	Visual Studio, Jupyter Notebook, Google Colab, Sagemaker
Back-end	Flask API, FAST API
Languages	English, Nepali
Operating System	Ubuntu 22.04, Windows 11
Non Technical Skills	Critical Thinking, Communication, Teamwork, Problem-Solving, Time Management

Volunteer Experience

- 2020
- Outreach Partner**, Wonderland AI Summit, Belgrade, Serbia - **National Representative from Nepal**
- 2020
- Media Partner**, Quantum Hack, Kathmandu, Nepal - **contributed to promoting the events**
- 2019
- Tech Supporter**, VIT Hack, Vellore, India - **provided mentorship to participants**
- 2019
- Online Partner**, Everest Hackathon, Kathmandu, Nepal - **contributed to promoting the events**
- 2019
- Tech & Online Partner**, BKNS Techno Fest, Kathmandu Nepal - **provided mentorship to participants**