Sushil Thapa

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Education

Tribhuvan University • Institute of Engineering • Kathmandu, Nepal   Attended 2012 – 2016
Bachelor of Engineering • *Electronics&Communication Engg.*

Himalayan White House Int'l College • Kathmandu, Nepal   Attended 2010 – 2012
Plus 2 Science • HSEB

Experience

Senior Machine Learning Engineer – Team Lead   Jan 2020 – Present

Machine Learning Engineer   Sep 2017 – Dec 2019
Fusemachines Nepal Pvt. Ltd., Kathmandu, Nepal.

- Lead Machine Learning teams to build pipelines for solving client-related Machine Learning problems.
- Research and Development on multiple ML Projects under Dr. Steven Rennie, Dr. Sameer Maskey.
- Provide training, workshops, and mentorship on ML&DL for various in-house training courses.

Instructor – Fusemachines AI Microdegree$^{TM}Program < www.fuse.ai >$ $Sep 2019 -- Present$
Fuse AI School, Kathmandu, Nepal.

- Lead Instructor for on-site sessions(theory+practical) for Deep Learning Course (Topics include but limited to ANN, CNN, RNN, VAE, GAN, RL, Model Deployment)
- Teaching Assistant for on-site theory sessions by Professors for Machine Learning Course
- Conduct on-site practical coding sessions on Machine Learning and Deep Learning (class of 25 students each)

Researcher/Developer – Artificial Intelligence   Feb 2017 – Sept 2017

Research&Development Intern   Oct 2016 – Feb 2017
Spark Tech Pvt. Ltd., Kathmandu, Nepal.

- Research and development on Machine Learning solutions related to Image Processing, Audio Analysis, and Internet Of Things
- Investigate, prototype, and refine algorithms in computer vision and deep learning as directed by the mentor.

Projects

Object Detection System – Video Intent Classification   Dec 2019 - Present
Fusemachines Nepal

- Apply multiple object detection algorithms and perform their accuracy-latency trade-off analysis
- Built data pre-processing and novel augmentation pipelines to improve the accuracy and robustness

Rectif.ai – Posture Recognition System   Aug 2019 - Oct 2019
Personal Project

- Research and development attempt for Global Pytorch Hackathon 2019.
- Applied Convolutional Neural Network (MobileNet based Posenet model) for detection of different poses
- Use Neural Network(ANN) to classify if the detected pose is correct or incorrect.
- Open Source: pip install rectif-ai

Image Captioning Project – MSCOCO Challenge   Oct 2017 - Apr 2018
Fusemachines Research

- Development of a baseline model for Image Captioning Project implementing this paper
- Train and tune baseline models and research on building it's evolution. (Running)

Hawaiian-ASR – Automatic Speech Recognition   Aug 2018 - Aug 2019
Dr. Lipyeow Lim, UH

- Worked on audio and textual data collection and pre-processing pipeline
- Development of State of the Art ASR and translation algorithms for converting missionary to modern orthography.

Fuse Extract – Optical/Intelligent Character Recognition   Dec 2018 - Aug 2019
Fusemachines Nepal Pvt. Ltd.

- Built data collection pipeline for collecting and annotating multilingual printed&handwritten images with their corresponding texts.
- Built image processing pipeline for image registration and ROI extraction.
- Trained Convolutional feature based Sequence Deep learning model to extract texts from cropped ROIs.

RARE: – Real-time Audio Recognition Engine   Apr 2017 - Sep 2017
Spark Tech Pvt. Ltd.

- Worked on research and development of custom audio fingerprinting and template matching algorithm.

Centralized Biometric Attendance System   Feb 2017 - Apr 2017
Spark Innovation

- Developed Bio-metric Fingerprints Identification module using CNN and Minutiae Matching Algorithm.

Other projects
Open Source contribution

- Implemented *Adversarial Neural Cryptography* in PyTorch based on Abadi et. al.
- Custom plant recognition module using Capsule Network.
- Implement assignments of edX AI MicroMasters like 2048 solver, 8-Puzzle solver, n-gram models etc.
- Emotion Detection and Recognition from Text Using LSTM.
- Recommendation system for ingredients replacement, novel food products and recipe generation system.

PUBLICATIONS

- A Simple and Effective Baseline for Out-of-Distribution Detection using Abstention (ICLR 2021, Under review)

TECHNICAL & COMMUNICATION SKILLS

- Programming languages: Python, C/C++, PHP, Matlab
- Tools: PyTorch, Keras, TensorFlow2.0, Numpy, Pandas, Matplotlib, OpenCV, Scikit-Learn, NLTK
- Familiar with: LaTeX, Linux, Git, AWS, Google Cloud Platform.

RELEVANT CERTIFICATES

- edX: AI MicroMasters Program (1+ Year, Certified with Proctored Examination)
  - Artificial Intelligence
  - Machine Learning
  - Coursera: Machine Learning, Andrew Ng (11 weeks)
  - Coursera: Neural Networks for Machine Learning, Geoffrey Hinton (16 Weeks)
  - Coursera: Natural Language Processing, University of Michigan (12 Weeks)
  - Coursera: Algorithmic Toolbox, Stanford University
  - Udacity: Deep Reinforcement Learning Nanodegree
  - Udacity: Computer Vision Nanodegree

FELLOWSHIP

- Fusemachines AI Fellowship, Apr 2017.
- Merit-based Employee child Scholarship, Ministry of General Affairs, Nepal.

COMMUNITY SERVICES

Member – Robotics Club   Nov 2014 – Feb 2016
Institute of Engineering, Kathmandu, Nepal.

- Build theme-based robots to compete in various national and international Robotics Competitions.
- Conducted institution-wide seminars and training sessions related to Robotics, Automation, and AI.
- *Awards:*
  - Country Winner, Represented Nepal in International Robotics Challenge(IRC), Techfest 2015, IIT Bombay.
  - Finalist, Step-up Competition, Kshitij 2014, IIT Kharagpur.

Mentor – Volunteer

- Mentor, Community Volunteer at DN: AI Developers Nepal.
- Facilitator/Mentor for Fusemachines AI Fellowship 2018, 2019.

REFERENCES

Dr. Steven J. Rennie
Senior Research Scientist, Pryon AI
Prev. Director of Research, Fusemachines Inc.
Prev. Adj. Asst. Professor, Columbia University.
Prev. Team Lead, IBM T.J. Watson Research Center
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Founder & CEO, Fusemachines Inc.
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