

SUSHIL THAPA

New Mexico, USA

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EXPERIENCE

Graduate Research Assistant

Jan 2021 – Present

New Mexico Tech+Los Alamos National Lab, New Mexico, USA

- Applying interpretable Machine Learning in Health and cancer genomics
- Exploring large scale multi-label text classification based on Transformers
- Exploring multidimensional mode-connectivity and analysis of loss landscapes of deep neural networks.

Deep Learning(/ML) Instructor – AI MicrodegreeTM Program < www.fuse.ai >

Sep 2019 – Jul 2020

Fuse AI School, Kathmandu, Nepal.

- Teach Deep Learning topics like Neuralnets, CNN, RNN, VAE, GAN, RL, Model Deployment, etc. in fuse.ai Education initiative.
- Conduct on-site practical coding sessions on Machine Learning and Deep Learning algorithms (class of 25 students each)

Senior Machine Learning Engineer – Team Lead

Jan 2020 – Dec 2020

Machine Learning Engineer

Sep 2017 – Dec 2019

Fusemachines Inc., New York, USA.

- Directly responsible for executing an idea to a full-fledged scalable in-house product.
- Design, build and launch efficient and reliable models, pipelines for solving Enterprise-level Machine Learning problems for various clients.
- Lead Fusemachines AI Education curriculum and content development teams, Co-responsible for ideating, executing and refining the Deep Learning, Computer Vision, NLP and Reinforcement Learning courses.
- Co-responsible in hiring and scaling team from 6 people to 60+ ML Engineers, managed and provided in-house training, workshops, mentorship and paper reading sessions on Deep Learning.

Research&Development Engineer – Artificial Intelligence

Jan 2017 – Sep 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 applications as directed by the mentor.

EDUCATION

New Mexico Institute of Mining and Technology • New Mexico • USA

Jan 2021 – Present

Master's of Science • Computer Science • Focus: Machine Learning

Tribhuvan University • Institute of Engineering • Kathmandu, Nepal

Attended 2012 – 2016

Bachelor of Engineering • Electronics & Communication Engineering • Focus: Robotics & AI

PROJECTS

Object Detection System – Video Intent Classification

Dec 2019 - Apr 2020

Fusemachines Nepal

- Apply multiple object detection algorithms on client's custom dataset and perform their accuracy-latency trade-off analysis.
- Applied Edge-computing while deploying best performing models on GPU IOT devices like Jetson Nano.

Image Captioning Project – Microsoft COCO Challenge

Oct 2017 - Apr 2018

Fusemachines Research

- Research and experiment on building state-of-the-art image captioning models based on SCST paper (CVPR-2016) and its evolution with Dr. Steven Rennie for MSCOCO Caption Challenge.

Fuse Extract – Optical/Intelligent Character Recognition

Dec 2018 - Aug 2019

Fusemachines Nepal Pvt. Ltd.

- Built data collection pipeline, image processing pipeline for Image Registration and ROI extraction.
- Developed and experimented with Convolutional and Recurrent DL models to extract information from images.

Rectif.ai – Posture Recognition System

Aug 2019 - Oct 2019

Global Pytorch Hackathon 2019 Submission

- Applied MobileNet based Posenet model for detection of different body keypoints & notify if the detected pose seems appropriate or not by classifying the keypoint locations.
- To install and try: pip install rectif-ai

Hawaiian-ASR – Automatic Speech Recognition

Aug 2018 - Aug 2019

Dr. Lipyeow Lim, University of Hawaii at Mānoa

- Built an entire Hawaiian ASR dataset collection and pre-processing pipeline with forced-alignment.
- Development of State of the Art Hawaiian ASR model and applied translation algorithms for converting missionary to modern orthography.

RARE: – Real-time Audio Recognition Engine

Apr 2017 - Sep 2017

Spark Tech Pvt. Ltd.

- Research and development of custom audio fingerprinting and template matching algorithm.
- End-to-end machine learning algorithm development and deployment (including ETL, data quality analysis, Evaluation, Monitoring etc.) in production to be used by 20+ companies.

PUBLICATION

- An Effective Baseline for Robustness to Distributional Shift. Preprint: (<https://arxiv.org/abs/2105.07107>)

SKILLS

- Programming languages: Python, C/C++, PHP, Matlab
- Tools: PyTorch, Keras, Jax(Flax/Haiku), TensorFlow2.0, Numpy, Pandas, Matplotlib, OpenCV, SKLearn, NLTK
- Familiar with: \LaTeX , Linux, Git, AWS, GCP

SUMMER SCHOOLS

- Eastern European Machine Learning Summer School(EEML), July 2021.
- PRAIRIE/MIAI AI summer school(PAISS), July 2021.
- Neuromatch Deep Learning Summer School(NMA-DL), August 2021.
- Machine Learning Summer School(MLSS), August 2021.
- Gaussian Process Summer School(GPSS), September 2021.

CERTIFICATIONS (WITH LINKS)

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

FELLOWSHIPS

- Merit-based Engineering Scholarship 2013, Ministry of General Affairs, Nepal
- AI Fellowship 2017, Fusemachines Inc.
- Fatima Al-Fihri Predoctoral Fellowship 2021

COMMUNITY SERVICES**Google DSC Lead** – Google Developers

Jul 2021 – Present

New Mexico Tech, Socorro, NM.

- Established a Google recognized student club in the university, identify local partners to work with and lead project building activities.
- Expose students on developer products and platforms through hands-on workshops and events.

Robotics Engineer – Robotics and Automation Center

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, India

Mentorship

- Founder/Mentor, New Mexico Tech Artificial Intelligence Group, Jun 2021-Present.
- Mentor, Community Volunteer at DN: AI Developers Nepal, 2018 - 2021.
- Facilitator/Mentor, Fusemachines AI Fellowship 2018, 2019.