

Sushil Thapa

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EDUCATION

- New Mexico Tech** New Mexico, USA
• *Master's in Computer Science, Focus: Machine Learning* Jan 2021 - Dec 2022
Courses: Artificial Intelligence, Machine Learning, Neural Networks, Data Science, Advanced Algorithms, Compiler Design
- Tribhuvan University, Institute of Engineering** Kathmandu, Nepal
• *Electronics and Communication Engineering, Focus: Robotics&AI* 2012 - 2016(Attended)
Courses: AI, Data Mining, Big Data Technologies, Probability and Statistics, Discrete Structures, Digital Signal Processing, C, C++

WORK EXPERIENCE

- Fusemachines (New York, USA)** Kathmandu, Nepal
• *Machine Learning Engineer* Sep 2017 - Dec 2020
 - Designed and built Pytorch based handwritten document extraction model with upto 2% CER using CRNN model with CTC; deployed it as a scalable ML SAAS product on AWS by collaborating with multidisciplinary teams.
 - Built end-to-end pipeline for custom object detection/tracking and deployed on a Jetson Nano edge device; achieved 82% mAP score with pre-training, customized SSD & loss function and upto 22 fps with quantization and pruning.
 - Led teams to develop international AI education initiative coursework(www.fuse.ai) on Deep Learning, Computer Vision, NLP and Reinforcement Learning; taught DL and ML to classes of 25 students each.
- New Mexico Tech (Los Alamos National Lab)** New Mexico, USA
• *Graduate Research Assistant* Jan 2021 - Present
 - Built large-scale extreme multi-label text classification system leveraging BERT and Hierarchical Attention Networks.
 - Extracted robust determinants of classification by applying interpretable Machine Learning with SHAP & LIME and self-supervised knowledge transfer with TabNet in Health/RNA-Seq tabular data.
 - Investigated 3D Mode-connectivity and analyzed loss landscapes of Deep Neural Networks for Fast Ensembling.
- Spark Tech Pvt. Ltd.** Kathmandu, Nepal
• *R&D Engineer* Oct 2016 - Sep 2017
 - Built audio segmentation and tagging with audio fingerprint hashing algorithm.

EXPERIENCE

- Researcher : Sebastian Thrun Lab, SAIL Stanford University** Remote
• *Experimented with end-to-end multimodal data augmentation via gradient-free optimization.* Jul 2021 - Nov 2021
- Mentee : Google Deepmind Mentorship (EEML 2021)** Remote
• *Exploring novel self-supervised sample efficient offline Reinforcement learning system.* Jul 2021 - Present
- Robotics Engineer : Robotics and Automation Center, Thapathali Campus** Kathmandu, Nepal
• *Built theme-based robots, Represented Nepal & won runner-up in int'l robotics competition.* Nov 2014 - Sep 2016
- Google Developers Student Club Lead : New Mexico Tech University Chapter** New Mexico, US
• *Established and leading Google-recognized student club to organize different Google tech events.* Jun 2021 - Present

SKILLS

- Languages** Python, C/C++, R
- Tools** PyTorch, TensorFlow2(Keras), Jax(Flax), Numpy, Pandas, Matplotlib, OpenCV, Scikit-learn

PUBLICATION

- S. Thulasidasan, **Sushil Thapa**, S. Dhaubhadel, G. Chennupati, T. Bhattacharya and J. Bilmes, "An Effective Baseline for Out-of-distribution detection and Robustness to Distributional Shift," 2021 20th IEEE International Conference on Machine Learning and Applications (ICMLA), 2021, pp. 278-285, doi: 10.1109/ICMLA52953.2021.00050.
- Currently state-of-the-art in paperswithcode.com leaderboard in some vision and NLP out-of-distribution benchmarks

AWARDS

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

ADDITIONAL PROJECTS

- Research: MSCOCO Image Captioning:** Investigated ways to improve image captioning models based on a recently published state-of-the-art SCST paper (Rennie et. al, CVPR'16). Tech: Reinforcement Learning(SCST), CNN, RNN, Self Attention, Visual Attention, Beam Search (Oct'17 - Apr'18)
- Opensource App: Posture Recognition System(rectif-ai):** Built a body keypoint tracking and bad posture detection system based on 'Posenet' and Neural Net for official Pytorch Hackathon 2019; App runs on background, tracks posture of user and notifies when bad posture is detected; Opensourced and published: 'pip install rectif-ai'
- Hawaiian Automatic Speech Recognition System(Hawaiian-ASR):** Built hawaiian language recognition system from the scratch by scraping data, automatic force alignment of text and speech for labels and training with DeepSpeech2. (2017)