Sushil Thapa

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Work Experiences

- **New Mexico Tech + Los Alamos National Lab** — New Mexico, US
  Graduate Research Assistant — *Jan 2021 - Present*
  - Building large-scale extreme multi-label text classification based on self supervised learning
  - Investigating Mode-connectivity and analyzing loss landscapes of Deep Neural Networks for Fast Ensembling
  - Experimenting Interpretable Machine Learning and self-supervised knowledge transfer in Health/RNA-Seq
- **Fusemachines Inc.** — New York, US / Kathmandu, Nepal
  Machine Learning Engineer → Sr. Machine Learning Enginner — *Sep 2017 - Dec 2020*
  - Engineered&deployed accurate, efficient and reliable Pytorch and Tensorflow models&data pipelines for solving 4 Enterprise-level problems
  - Responsible for scaling AI team from 6 to 60+ ML Engineers; managed and provided training, workshops&mentorship
  - Led international AI Education Initiative curriculum teams; Co-responsible for ideating, preparing and teaching different courses on Deep Learning, Computer Vision, NLP and Reinforcement Learning to a class of 25 students
- **Spark Tech Pvt. Ltd.** — Kathmandu, Nepal
  R&D Engineer — *Oct 2016 - Sep 2017*
  - Research and development on ML solutions with Image Processing, Audio Analysis, and Internet Of Things

Community Services

- **Google Developers Student Club Lead, New Mexico Tech Chapter** — New Mexico, US
  Established and leading Google-recognized student-club to organize different Google tech events. — *Jun 2021 - Present*
- **Robotics Engineer, Robotics and Automation Center in Campus** — Kathmandu, Nepal
  Built theme-based robots, Represented Nepal in multiple int'l robotics competitions — *Nov 2014 - Sep 2016*
- ***Mentor:*** *New Mexico Tech AI Group, DN: AI Developers Nepal, AI Fellowship Nepal*

Education

- **New Mexico Tech** — New Mexico, USA
  MS in CS, Focus: Machine Learning — *Jan 2021 - May 2022 (Expected)*
  Courses: *Artificial Intelligence, Machine Learning, Neural Networks, Data Science, Analysis Of Algorithms, Compiler Design*
- **Tribhuvan University, Institute of Engineering** — Kathmandu, Nepal
  Electronics and Communication Engineering, Focus: Robotics&AI — *(Attended) 2012 - 2016*
  Courses: *AI, Data Mining, Big Data Technologies, Probability and Statistics, Discrete Structures, Digital Signal Processing, C, C++*

Skills

- **Languages** Python(preferred), C/C++
- **Tools** PyTorch, TensorFlow2(Keras), Jax(Flax), Numpy, Pandas, Matplotlib, OpenCV, Scikit-learn, NLTK, Spacy
- **Technologies** Linux, Git, AWS, GCP, SLURM, Agile

Publication

- An Effective Baseline for Robustness to Distributional Shift. Preprint: (https://arxiv.org/abs/2105.07107)
  This is currently state-of-the-art (rank #1 in paperswithcode.com leaderboard) in vision and NLP out-of-distribution

Fellowships

- Stanford University Sebastian Thrun Lab Apprenticeship (July 2021 - Present)
- Fatima Al-Fihri Predoctoral Fellowship 2021
- AI Fellowship 2017, Fusemachines Inc.
- Engineering Scholarship 2013, Ministry of General Affairs(moga.gov.np), Nepal

Projects

- **Enterprise Application: Object Detection and Tracking:** Built(&deployed) efficient stand-alone object detection system based on custom SSD architecture. Tech: Pytorch, Tensorflow, Edge Computing, Quantization and Pruning(Dec'19 - Apr'20)
- **Research: MSCOCO Image Captioning(Reinforcement Learning, CNN, RNN):**Investigated ways to improve image captioning models based on evolutions of recent state-of-the-art SCST paper (Rennie et. al, CVPR'16) under its author. Tech: Reinforcement Learning(SCST), CNN, RNN, Self Attention, Auto Encoders, Beam Search (Oct'17 - Apr'18)
- **In-house Product: Multilingual Handwriting Recognition and Information Extraction System:** Built pipelines for data collection & generation, image-alignment & ROI extraction and deploy them. Tech: Fullstack DL, CRNN, CTC (2019)
- **Opensource App: Posture Recognition System(rectif.ai):** Making the world a better place one posture at a time; Submitted this body keypoint tracking and bad posture detection system based on posenet model to Pytorch Hackathon'19