AMBRISHRAWAT
Machine Learning Researcher
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EDUCATION

Machine Learning, Speech and Language Technologies 2015 – 2016
Master of Philosophy, University of Cambridge 70.13%
Mathematics and Computing 2010 – 2015
Master of Technology, Indian Institute of Technology Delhi 8.246 / 10.0

ACADEMIC EXPERIENCE

Model Uncertainty for Adversarial Images using Dropout *M. Phil. Thesis, 2016*
Statistical dispersion in misclassification of adversarial images was studied. Adversarial images were generated for Convolutional Neural Networks trained on CIFAR-10 data set. Inexpensive uncertainty estimates were computed using Dropouts. Experiments hinted at an absence of model-uncertainty in the Dropout-interpretation of Bayesian CNNs.

Machine Learning for Speech & Language based Systems *Course Projects, 2016*
Speech Recognition (ASR), Text-to-Speech synthesis (TTS), Machine Translation (MT), and Spoken-Dialogue systems were investigated in-depth. Rigorous theoretical analysis was coupled with experimentation of nuanced aspects like – use of Deep Learning, Confusion Networks, speaker adaptation, and Language Models in ASR, TTS, and MT; belief tracking and policy optimisation in Dialogue Manager; engineering systems for Keyword Spotting using HTK Toolkit.

Visual SLAM on Android *M. Tech. Thesis, 2015*
Developed an Android application for simultaneous localisation and mapping of a device using Kalman-Filters and SIFT-corner detectors. Sensory inputs from camera, gravitation sensor and accelerometer were used.

Multi-document Text Summarisation *Research Project, 2014*
Combined random-indexing based word-space model with clustering and sentence-selection schemes for multi-document text-summarization. ROUGE scores were evaluated on DUC datasets for a detailed comparative analysis.

RESEARCH INTERNSHIPS

Large-Scale Deep Learning Applications IBM Research, *Ireland*
Sep 2016 – present
Developed and benchmarked performance for a library built over TensorFlow for easy training and testing of Deep Learning models in a distributed environment. Investigated novel frameworks for weather-related delays in airline network.

Distributed control for SwissFEL PSI Villigen, *Switzerland*
May 2015 – Aug 2015
Developed a data acquisition system using ZeroMQ and protocol buffers. A detailed publication of the system was presented at **ICALEPCS 2015**, Melbourne.

Braille Tutor on Raspberry Pi Assistech Lab IITD, *India*
Jan 2014 – June 2015
Led software development for a multimodal Braille tutoring device. Speech, video and tactile feedback were integrated. (**India Patent Application**: 1729/DEL/2014)

Audio playback on Android Qualcomm, *India*
May 2013 – July 2013
Optimised memory-copy operations for reduced power consumption during audio playback. A 50ms reduction in wake-up time of OpenMAX threads was observed.

Parallelising Graph Primitives on GPUs IISc Bangalore, *India*
June 2012 – July 2012
Implemented parallel scan and segmented scan using OpenCL for AMD Raedon.

SKILLS

Programming Languages:
Python, Java

Machine Learning Tools:
TensorFlow, Theano, Caffe, MATLAB

Other APIs (familiar):
Spark, Protocol Buffers, OpenCV, HTK, ZeroMQ, CUDA, OpenCL

OTHER INTERESTS

- Blogs at 90percenthumour
- Worked at Avanti Fellows for science and math mentorship
- Teaching Assistant for first-year Calculus course at IITD