Akshit Tyagi

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Education

Sept '18 - Present Master of Science in Computer Science from **Univ. of Massachusetts, Amherst**
GPA: 4.0/4.0

May 2018 Bachelor of Technology from **Indian Institute of Technology, Delhi**
Major: Electrical Engineering
GPA: 8.5/10

May 2014 All India Secondary School Certificate Examination in Sciences
Delhi Public School, R.K. Puram
Aggregate Percentage: 97.0

Work Experience

May - July 2017

Machine Learning Research Intern at Amazon
CoreML & Self-Serviced Performance Ads

- Worked on designing, developing and deploying an auto-moderation system for book campaigns
- Designed a text based model to produce feature vectors for the given campaign from its custom text and description
- Developed an end-to-end training and testing pipeline for weekly training builds and live scoring of incoming campaigns
- Deployed this model to production for batch-level scoring of a set of incoming campaigns
- Achieved a 25% replacement of manual moderation by auto moderation while the dip in accuracy of less than 1%

May - July 2016

Summer Engineering Intern at NVIDIA
CPU Verification and Testing

- Worked on handling undefined op-codes for an architectural simulator
- Developed a layer to handle instruction level access for the CPU and the execution of exception return
- Compared native performance with the simulator and improved upon the perf-per-watt characteristics. Used QEMU to emulate an ARM environment for CPU architectural testing

Programming Languages and Frameworks

Extensive: Python, C, C++, Java, PyTorch, MATLAB, Keras, Tensorflow, Bash
Intermediate: Caffe, Mathematica, sklearn, gensim, CUDA, OpenMP
Basic: JavaScript, CSS, Android Studio, MPI

Research Projects

UMass Amherst & Amazon (Sept'18 - Present)
Word Vectors and making them interpretable
Currently working with Amazon's Alexa team on building an intent classifier This will be integrated with the voice assistant as a tool to identify the intent of the utterance spoken by the user in a dialogue form. We plan to make this classification faster and more robust.

UMass Amherst (Sept'18 - Jan'19)
Getting better at Game Playing by transfer of skill
Worked on transfer learning in the context of game playing. Transfer Learning has been used to learn policies from 10 of the 11 Atari games and use these as policy initiliasers for the last game. A generative model is fit for the simulations of the first ten and then fine-tuned by Joint Training and Feature Extraction for the eleventh game. Results show promising transfer of policy in the context of Atari games.

IIT Delhi (Jan'18 - May'18)
Transfer Learning in Memory Networks for Question Answering
Worked on coming up with a technique to transfer knowledge between different domains of question answering, as mentioned in the Facebook bAbI dataset. End-to-End Memory Networks were used as the test-bench for transfer learning and as a learnable agent to answer questions in different domains. Model Initialization, Joint Training and Feature Extraction from the source to target domains gave significant improvements.

IIT Delhi (Dec'16 - Mar'17)
Compressing Deep Neural Nets
Implemented the baseline paper for Squeezenet and used decorrelation in its parameters to reduce the overall number of parameters by thresholding. All the parameters below a certain threshold were approximated as zero

IIT Delhi (Jan'16 - Feb'16)
Background Detection in a Video Stream
Developed a program to detect Background and Foreground pixels using the Background Subtraction technique (used Gaussian Mixture Models). Each pixel(three channel) was modeled as a mixture of Gaussians, the Gaussian(s) with the minimum variance were chosen to describe a background pixel.

Relevant Courses Taken

Computer Science	Parallel and Distributed Systems, Operating Systems, Reinforcement Learning, Computer Architecture, Artificial Intelligence, Probabilistic Graphical Models, Deep Neural Networks, Natural Language Processing
Electrical Engineering	Communication Engineering, Control Theory, Digital Logic and Electronics, Machine Learning, Deep Learning
Mathematics	Probability and Stochastic Processes, Statistical Inference, Linear Algebra and Differential Equations, Calculus

Awards, Grants & Honours

Design & Innovation Summer Award(DISA)	IIT Delhi(2015)
Institute Award for being a student in the top 7% in the first year	IIT Delhi(2014-2015)
National Talent Search Examination 2010	NCERT(July 2010)
KVPY Fellowship 2012-13	Dept. of Sci. & Tech.(2013)
Indian National Chemistry Olympiad 2014, Top 50	HBCSE(Feb 2014)
Junior Science Talent Search Examination 2011, 2nd Position	Govt. of Delhi(July 2011)