Akshit Tyagi

Research Engineer at Akasa

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EDUCATION

MAY 2020	Master of Science in Computer Science from **Univ. of Massachusetts, Amherst**
MAY 2018	Bachelor of Technology from **Indian Institute of Technology, Delhi**
	Major: Electrical Engineering

WORK EXPERIENCE

NOV 2021 - PRESENT

Research Engineer at AKASA
Building multi-modal models for hospital-patient interaction data
- Working on building a context aware representation for care-provider and patients' interaction
- Representation includes health insurance cards and previous history of the patient

MAR - OCT 2021

ML Engineer at ARMORBLOX
Building and improving email security using NLP

- Worked on time-series based anomaly detection models for account compromise detection
- Using out-of-distribution detection on composite features built upon users' email profiles
- Used weak supervision to decrease model maintenance as distribution drift occurs

JULY 2020 - JAN 2021
(FIXED TERM POSITION)

AI Resident at X, THE MOONSHOT FACTORY, FORMERLY GOOGLE X
Worked on ultra low power TinyML as part of a stealth mode project

MAY - AUGUST 2019

Applied Science Intern at ALEXA AI
Implicit Memory at Alexa Brain

- Tackled the problem of Conversational Question Answering in the context of agents like Alexa
- Worked on developing new techniques for dealing with noise in the question text, presented to Alexa from speech
- Designed noise-robust embeddings through stability training, while improving over the baseline of augmented training
- Worked on developing Adversarial training for noise-domain adaptation, as another implementation of robust embeddings

PUBLICATIONS AND POSTERS

Akshit Tyagi, Varun Sharma, Rahul Gupta, Lynn Samson, Nan Zhuang, Zihang Wang, Bill Campbell. **Fast Intent Classification for Spoken Language Understanding. ICASSP 2020**

Akshit Tyagi, Anjishnu Kumar, Abhinav Sethy. **Conversational Question Answering and Noise Robustness.** **Amazon Research Days 2019**

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

(SEPT'19 - DEC'19)

Calibrating and Speeding up Bayesian Learning of Neural Nets
Currently working on making bayesian learning of parameters for deep neural nets faster by using MCMC samples. Previous approaches using distillation have shown to be susceptible to large uncertainty in datasets. We plan to make such MCMC based models robust to larger uncertainty while being fast.

UMASS AMHERST

(SEPT'19 - DEC'19)

Causal Inference Formalisms for Hierarchical Medical Diagnosis
Currently working on coming up with a formalism for hierarchical medical diagnosis in a causal inference setting. Previous approaches have either not taken advantage of hierarchical diagnosis models or have ignored it completely by using gaussian process. We aim to use different levels of diagnosis for additional information gain.

UMASS AMHERST
& AMAZON
(JAN'19 - AUG'19)

Fast Inference in Deep language models for Intent Classification
Worked 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 were able to achieve a 20% reduction in effective model size while largely preserving model performance.

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 bAbI dataset.
End-to-End Memory Networks were used as the test for transfer learning and as a agent to answer questions in different domains. Model Initialization, Joint Training and Feature Extraction gave significant improvements.

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, Systems

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)