

# Akshit Tyagi

ML Engineer Armorblox

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[akshittyagi.github.io](https://akshittyagi.github.io)

## EDUCATION

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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

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MAR 2021 - PRESENT **ML Engineer** at ARMORBLOX

*Building and improving email security using NLP*

- Working 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

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 and deployed an end-to-end training and testing pipeline for weekly training builds and live scoring of incoming campaigns
- Our model achieved a 25% replacement of manual moderation by auto moderation while the dip in accuracy of less than 1%

## PUBLICATIONS AND POSTERS

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

## PROGRAMMING LANGUAGES AND FRAMEWORKS

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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

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- UMASS AMHERST **Calibrating and Speeding up Bayesian Learning of Neural Nets**  
(SEPT'19 - DEC'19) 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 **Causal Inference Formalisms for Hierarchical Medical Diagnosis**  
(SEPT'19 - DEC'19) 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 **Fast Inference in Deep language models for Intent Classification**  
(JAN'19 - AUG'19) 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 **Transfer Learning in Memory Networks for Question Answering**  
(JAN'18 - MAY'18) 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

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- 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

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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, 2<sup>nd</sup> Position

GOVT. OF DELHI(JULY 2011)