

EDUCATION

- **Indian Institute of Technology Kharagpur**

B.Tech.(Hons.) in Electronics and Electrical Communication Engineering; GPA: 8.81/10 July 2014 - May 2018

WORK EXPERIENCE

- **Research Assistant, National University of Singapore**

Privacy and Fairness in Machine Learning Dec 2018 - Present

- **Graduate Intern, National University of Singapore**

Privacy Analysis of Releasing High Dimensional Models June 2018 - Nov 2018

- Quantified the leakage about training data from parameters of a Bayesian Network and derived a bound on the maximum power of any adversary to perform tracing attack.
- Empirically showed the validity of bound by performing tracing attack on data sets from different domains that include genome sequences, location check-ins and purchase history.

- **Intern, Advance Science Group, American Express**

Topic Modelling for Hierarchical Categorization of Webpages May 2017 - July 2017

- Performed hierarchical categorization of web browsing data with the help of multi-layered architecture i.e. iteratively performing Latent Dirichlet Allocation (LDA) on reduced webpages at each layer.
- Evaluated the efficiency of using Umass measure, Topicwise Umass measure as metric to choose number of topics for LDA.

PUBLICATIONS

- “Ultimate Power of Inference Attacks: Privacy Risks of High Dimensional Models”, under review as conference paper at 26th ACM Conference on Computer and Communications Security, 2019.

SKILLS & EXPERTISE

- **Languages:** C, Python, MATLAB, L^AT_EX, R(Beginner)
- **Frameworks/Libraries:** PyTorch, Theano, Gensim, NLTK, TensorFlow(Basic Familiarity), Weka
- **Domains:** Differential Privacy, Private Optimization, Model Explanations, Adversarial Machine Learning

RELEVANT PROJECTS

- **A Joint Embedding Space for Images and Text** *July 2017 - May 2018*
 - Created an embedding space where semantically similar images and text will be closer to each other.
 - Using image, text features as input to 2-layer neural networks, learned the joint embedding space on Flickr8K dataset for the tasks of caption and image retrieval.
 - Achieved 68.1% and 61.9 % Recall@Top10 rate for caption retrieval and image retrieval respectively.
- **Vocal Non-Vocal Classification of Hindustani Music** *March 2016 - June 2016*
 - Developed a model using MFCC features and Artificial Neural Networks that could classify frames of a Hindustani Music Signal as Vocal and Non-Vocal to an accuracy level of up to 75%.
- **Artistic Style Transfer and Text to Image Synthesis** *Sep 2017 - Nov 2017*
 - Implemented artistic style transfer and text to image synthesis with GAN using pretrained models.
- **One Class SVM for User Authentication** *Aug 2017 - Nov 2017*
 - Built a one class SVM model for continuous authentication that achieved a sensitivity of 95%.

ACADEMIC ACHIEVEMENTS

- All India Rank 735 in IIT-JEE Advanced among 1,50,000 candidates.
- All India Rank 73 in IIT-JEE Mains among 13,00,000 candidates.