Anup Anand Deshmukh

University of Waterloo, Canada | +1 5195057534 | aa2deshmukh@uwaterloo.ca | Github | LinkedIn | Web Address

EDUCATION

University of Waterloo, Canada *Sept 2019-Present*

Degree	Master of Mathematics in CS (thesis)
Supervisor	Prof. Ming Li
Coursework	Fundamentals of Optimization, Numerical Analysis
Teaching Assistant	CS 115, Introduction to Computer Science (Fall 2019)

International Institute of Information Technology, Bangalore *Aug 2014-July 2019*

Degree	Integrated Masters in Information Technology
CGPA	Overall: 3.32/4, Theoretical CS Major: 3.63/4
Coursework	Advanced Machine Perception, Advanced Machine Learning, Data Structures and Algorithms, Linear Algebra
Teaching Assistant	CS 302, Theory of Automata and Computations (Fall 2018) SP 825, Visual Recognition (Spring 2019)

INTERESTS

Machine Learning for Recommender Systems, NLP and Computer Vision

PUBLICATIONS

Anup Deshmukh, Pratheeksha Nair, Shrisha Rao,"A Scalable Clustering Algorithm for Serendipity in Recommender Systems," *ICDM 2018 workshop - SAREC [Paper] [Code]*

- Effectuated serendipity in movie recommender systems with an algorithm, Serendipitous Clustering for Collaborative Filtering (SC-CF) that also efficiently tackles the problem of high sparsity.

Rameshwar Pratap, **Anup Deshmukh**, Pratheeksha Nair, Tarun Dutt, **"Fast and Provable Concept Decompositions in Large Text Corpus,"** *ACML 2018 conference [Paper] [Code]*

- Proposed an algorithm by considering the spherical clustering problem for large sparse document collections. Proved that, with our approach the computational complexity in SPKM++ can be decreased while retaining the $\mathcal{O}(\log k)$ approximation guarantee to the optimal clustering result.

RESEARCH EXPERIENCE

A Generative Adversarial Network for Diversity in Recommender Systems *July 2019*

Masters Thesis - Multimodal perception lab at IIIT-B *Guide: Prof. Dinesh Babu*

- Proposed a Generative Adversarial Network (GAN) which exploits Reinforcement Learning (RL) to give diverse yet relevant recommendations. Achieved 77% of intra-list diversity in recommendations.

Scaling up Simhash *Jan 2018-Aug 2018*

Under review in top AI conference *Guide: Prof. R. Pratap*

- Proposed a dimensionality reduction sketching algorithm - simsketch - which maintains an estimate of the cosine similarity between original real valued vectors.
- In the task of all-pair-similarity search we show that Simsketch significantly outperforms Simhash for higher threshold values on the precision-recall measure.

WORK EXPERIENCE

Perception of Emotions from Audio Signals *May 2018-Oct 2018*

Intern at FAST lab-CentraleSupelec, Rennes-France [Report] [Code] *Guide: Prof. Renaud Seguier*

- Analyzed different set of acoustic features which are designed to detect the perceptual content of audio with Convolutional Neural Network (CNN) in focus. Proposed Emo-CNN achieved 90.20% of categorical accuracy. Working on modelling human stress in the learnt 3-D emotion space.

Spatio-Temporal Features of Crowd Models *May 2017-July 2017*

Intern at Murdoch University, Perth-Australia *Guide: Prof. Ferdous Sohel*

- Worked on a problem of crowd counting which used conditional GANs on SHOCK and WIDER FACE datasets.

COURSE PROJECTS

Merge LSTM model for Image Description Generation *August 2017-April 2018*

Course: Research Elective [Report] [Code] *Guide: Prof. Dinesh Babu*

- Built the deep model using Keras on the construction which uses both LSTM's for language modelling and CNN's for generating image representation. Achieved BLEU score of 0.51.

Automated Essay Scoring with Cross Feature Vector Generation *August 2017-Dec 2017*

Course: Machine Learning I [Report] [Code] *Guide: Prof. G Srinivasa R.*

- Designed and implemented the Intelligent Text Rater (ITR) with the proposed novel approach of feature vector generation of text essays. ITR achieved MSE as low as 0.73 for essay ratings.

SKILLS

Languages	Python, C++, JScript
Tools	Keras, TensorFlow, Matlab, Latex

ACHIEVEMENTS & LEADERSHIP

2017 **Speaker**, TEDx pre-event IIIT-B
2016 **Co-Founder**, IIIT-B 'Comic Club'
2016 Winner of the Hackathon held in IIIT-B as part of the Signal Processing course
2014 Top 1% in Maharashtra State's Higher Secondary School Certificate (HSC) exam