Dhruv Kumar

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EDUCATION

University of Waterloo, Ontario, Canada — Sep 2018- Present

M. Math.(Thesis) in Computer Science — GPA: 87 / 100

Coursework- Deep Learning, Trust Modeling and Online Social Networks, Blockchains: Foundations and Applications, Privacy and Fairness in Data Science (Ongoing)

Indian Institute of Information Technology, Allahabad, U.P., India — Jul 2012- Jun 2016

B. Tech.(Hons) in Information Technology — GPA: 8.68 / 10.00 (9.07 - Last 2 years)

Relevant Coursework- Information Retrieval, Artificial Intelligence, Natural Language Processing, Cognitive Process Modelling, Optimization Techniques, Data Mining, Probability & Statistics, Mathematics(I, II, III).

RESEARCH EXPERIENCE

University of Waterloo

Master's Thesis — Jul 2019-Present

- "Text simplification": The main goal of sentence simplification is to rewrite text such that it becomes easier to read, while still retaining its original information and meaning. I am looking at models which can be controlled, use lesser training data and give insight into the simplification process.
  [Supervisors: Prof. Lukasz Golab, Prof. Olga Vechtomova]

Research Assistant/Natural Language Processing Lab — Sep 2019-Present

- Recently text generation models have been used to generate poetry, movie scripts, etc. We look at the task of generating lyrics for songs of different genres in a controllable manner.We use mel-spectrograms to represent songs and use it to condition the generation of lyrics.
  [Teammate: Gaurav Sahu; Supervisor: Prof. Olga Vechtomova]

Research Assistant/Sirius Blockchain Research Group — Jan 2019-Aug 2019

- Designed Consentio, a blockchain-based consent management system (CMS) that can handle up to 6000 transactions per second and is domain agnostic.
  [Teammate: Rishav Agarwal; Supervisors: Prof. Lukasz Golab, Prof. Srinivasan Keshav]

Research Assistant — Oct 2018-Feb 2019

- Proposed an attention based Natural Language Processing (NLP) model to detect implicit aggressiveness and incivility in online social networks and measured the role of preprocessing techniques and contextual embeddings in detecting the same.
  [Supervisors: Prof. Robin Cohen, Prof. Lukasz Golab]

Universität Paderborn, Paderborn, Germany — Jan 2016-Jun 2016

Studentische Hilfskraft (Student RA) at Analytic Information Systems and Business Intelligence Lab (AIS-BI)

- Bachelor's Thesis: "Compressed Knowledge transfer via Factorization Models in Recommender Systems". Developed an algorithm to incorporate metadata in Factorization Machines, thus improving their accuracy.
  [Supervisors: Dr. Artus Krohn-Grimberghe, Prof. Ratna Sanyal]
- Face recognition in videos: built a web application on top of Microsoft's Project Oxford.
  [Supervisor: Dr. Artus Krohn-Grimberghe]

Indian Institute of Information Technology, Allahabad, India — Jul 2015-Dec 2016

Research Assistant

- "Analysis of Time-Aware and Semantic Feature Based Music Recommender System". Proposed a modified Joint Matrix Factorization approach for incorporating semantic information related to items and tag-based information with an implicit user preference for boosting the accuracy of the overall system. The model adheres to the phenomena of time-variant Recommender System; thus, it also utilizes the time-related information of items.
  [Supervisor: Dr. O.P.Vyas]

PUBLICATIONS

- "$R.Agarwal^*, D.Kumar^*$, L. Golab, S. Keshav, Consentio: Managing Consent to Data Access using Permissioned Blockchains", arXiv, Under review at EDBT 2020
- "D. Kumar, R. Cohen, L. Golab, Online abuse detection: the value of preprocessing and neural attention models", in *NAACL workshop on Computational Approaches to Subjectivity, Sentiment & Social Media Analysis (WASSA)*, Jun 2019
- "N. Kushwaha, S. Mehrotra, R. Kalia, D. Kumar, O. P. Vyas, Inclusion of Semantic and Time-Variant Information Using Matrix Factorization Approach for Implicit Rating of Last.Fm Dataset," in *Springer Berlin Heidelberg - Arabian Journal of Science and Engineering* May 2016.

TEACHING ASSISTANT EXPERIENCE

- CS 115: Introduction to Computer Science, Fall 18, University of Waterloo.
- CS 230: Introduction to Computers and Computer Systems, Winter 19, University of Waterloo.
- CS 231: Algorithmic Problem Solving, Spring 19, University of Waterloo.
- CS 241: Foundations of Sequential Programs, Fall 19, University of Waterloo.

SERVICE

- **Program Committee / Reviewer** for NeurIPS2019 AISG Workshop

INDUSTRY EXPERIENCE

Arcesium(DE Shaw Group), Hyderabad, India — Jul 2016-May 2018

Software Engineer

- Worked as a full stack engineer, designing Fund and Investor Accounting solutions for Hedge Funds.
- Member of the team to onboard J.P.Morgan onto the platform.

Citigroup, Pune, India

Software Engineering Intern — May 2015-Jul 2015

- Trading Controls application for Equities Team using MEAN stack and d3. Received a full-time offer.

SKILLS

Languages- C, C++, Python, Java, Javascript, HTML, PHP and SQL.
Libraries- Pytorch, Tensorflow, Keras, Gym, Scikit-Learn, Pandas, and d3.js
Frameworks- AngularJS, Node.js, MongoDB, Flask, Spring, MyBatis and Struts

ACHIEVEMENTS & EXTRA-CURRICULAR

- Got Graduate Studies Research Travel Assistantship to attend the NAACL-HLT Conference, 2019.
- Accepted in the Deep Learning and Reinforcement Learning Summer School, 2019 (less than 25% acceptance rate).
- Received International Masters Student Award and University of Waterloo Entrance Scholarship for graduate studies.
- Stood in the top 0.5% in the All India Engineering Entrance Examination 2012.
- Worked as the Events Head of the annual cultural cum technical festival *Effervescence* 2014.
- Represented the college band as a drummer.