RushabMunot

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EDUCATION

2018*	B. Tech in Computer Science and Engineering	IIT Kanpur	9.3/10.0
2014	Class XII (Maharashtra State Board)	Abasaheb Garware College, Pune	90.77%
2012	Class X (Maharashtra State Board)	St. Vincent's High School, Pune	93.83%

ACADEMIC AWARDS

- **Academic Excellence Award for 2015-16, IIT Kanpur,** awarded for outstanding academic performance
- **Academic Excellence Award for 2014-15, IIT Kanpur,** awarded for outstanding academic performance

INTERNSHIPS

Summer Analyst – Risk Division, Goldman Sachs, Bengaluru *Summer 2017*

- Worked with the **Market Risk Management and Analysis - Credit Risk Modelling** team
- Modelled **constrained non-linear dependencies** between time-dependent **Credit Risk Factors**
- Handled three **critical fixes in models in production** pertaining to constraints on risk factors
- Developed several generalized methods to handle inconsistencies in stationarity, co-integration, etc.
- Calibrated financial indexes for markets outside the United States, where such data is unavailable
- **Offered** a full-time position at Goldman Sachs, Bengaluru

Research Intern - University of Texas at Dallas (remote) *Summer 2016*

- Theoretically analyzed a paper on tying parameters by quantization and applied it to logistic regression
- The method works as a regularizer by constraining the weights have a certain relationship amongst themselves
- Obtained an accuracy about **2-3%** higher than L2 regularization on specific email classification and Iris dataset

ACADEMIC PROJECTS

Word Sense Disambiguation using Localized RNNs – Undergraduate Project I, II, Dr. Harish Karnick *Jan 2017-Present*

- Implemented a **one-LSTM-per-word model**, where an LSTM model is trained for every word of interest
- The model is a deep LSTM layer with **word dependent, context-independent attention** mechanism
- Working on using WordNet Sense Keys hierarchically to disambiguate senses
- Hierarchical disambiguation provides much more tagged data as we go higher in the hierarchy
- Obtaining accuracies in the range of **80-95%** on the hard, line, serve, interests datasets (Senseval 2)
- Obtained an improvement of about **5-7%** for some words (One million sense tagged instances dataset) after including the extra data obtained from hierarchical disambiguation.

Probabilistic Sense Vector Generation, Prof. Piyush Rai *Sep 2017-Present*

- Improvising on the paper *Multimodal word embeddings, ACL 2017* by Athiwaratkun and Wilson
- Attempting to reduce the number of parameters and making the approach non-parametric
- Unlike the paper, we model every sense as a Gaussian with parameters as a combination of global parameters
- As another approach, we model every word sense as a mixture model over global Gaussian distributions.
- However, the second approach has unidentifiable sense vectors (but identifiable word vectors). We are trying to find an invariant quantity to make it identifiable.

Comparing Subgraph Isomorphism Algorithms – Course Project, Database Management Systems *Mar-Apr 2017*

- Implemented GraphQL and Ullman's Algorithm on the YEAST dataset (protein structure, amino acids)
- Optimized certain queries in the algorithms that slowed down Ullman's Algorithm
- Achieved a time reduction of up to **85%** in some cases (GraphQL vs. Ullman)

Abstractive Summarization using seq2seq models – Prof. Harish Karnick, Course Project, NLP *Aug-Dec 2016*

- Developed an abstractive summarization model for the Amazon Fine Food Reviews Dataset
- Based on the neural translation model proposed by Mikolov et al. 2014.
- An end-to-end deep encoder-decoder model, using LSTM layers for each of them

Image Tagging using Fast-Tag and Fast-Zero-Tag – Prof. Piyush Rai, Machine Learning Techniques *Aug – Dec 2016*

- Automatic annotation of images with unseen tags, based on other information about the tags
- The paper classifies relevant tags using similarity of the tags' word vectors with the image's principal direction
- Proposed a **Deep Neural Net with Multi-Task Loss** for FastTag and **kernelized SVMs** instead of Linear Mappings

OTHER PROJECTS

Compiler for C Programming Language — Implementing OS Functionalities in NachOS

Share@IITK – A platform to share belongings in IIT Kanpur

TEACHING EXPERIENCE

Teaching Assistant, Data Structures and Algorithms (ESO207, IIT Kanpur) *Spring 2018*

Will be a teaching assistant for this course which is mandatory for all Computer Science undergraduates

Tutor, Introduction to Computing (ESC101, IIT Kanpur) *Fall 2017*

An introductory course in C and programming techniques, with more than 400 enrolled students

- Conducted Tutorial Lectures for a batch of 40 students, once every week
- Designed and Graded Lab Sessions, Quizzes, Theory and Lab Exams
- Supervised the work of Teaching Assistants
- Mentored two advance track projects by first-year students (a web-based chat app with support for file sharing and encryption; fraud detection using SVMs, GMMs, Gaussian Anomaly Detection)

Mentor, Machine Learning Techniques (CS771, IIT Kanpur) *Fall 2017*

- Mentored course projects of five groups (five students each)
- The topics include sequence to sequence modeling for summarization, sense vector generation, word sense disambiguation and deep learning for keyword extraction

RESEARCH INTERESTS

Machine Learning, Natural Language Processing, Kernels and SVMs

COURSE WORK

Artificial Intelligence : Machine Learning Techniques, Natural Language Processing, Probabilistic Machine Learning, Algorithmic Game Theory, Computational Cognitive Science[#], Topics in Learning Theory[#], Stochastic Processes[#]

Computer Science : Data Structures, Algorithms, Database Management, Operating Systems, Compiler Design Computer Organization

Mathematics : Linear Algebra, Probability and Statistics, Introduction to Real Analysis, Complex Analysis, Discrete Mathematics, Abstract Algebra, Logic, Theory of Computation, Numerical Methods, Linear algebra for Theoretical Computer Science

Philosophy: Introduction to philosophy, Logic and Philosophy, Moral Thinking, Philosophy of Science

Undergraduate Projects: Word Sense Disambiguation using RNNs for context embeddings, Word Sense Disambiguation using localized RNNs (mentioned in Projects)

[#] Credited Next Semester

ACADEMIC ACHIEVEMENTS

- Secured a **rank of 20** in the **Regional Mathematics Olympiad**, 2012
- Qualified for the **Indian National Informatics Olympiad** 2013
- Secured **rank 1** in the **Centralized Admission Process**, Maharashtra State Board, 2014

POSITIONS OF RESPONSIBILITY

- **Vice President Helpline, Kanpur City – BloodConnect Foundation (2015-16)**
  - Blood Connect is a **national level NGO** working in the field of voluntary blood donation
  - Work involved handling immediate blood requests in emergency situations
  - Collaborated with multiple blood banks and hospitals for the same
  - Organized various Blood Donation Camps in the city in various universities, temples, etc.
  - Worked with Amar Ujala to spread awareness through their newspaper
- **Secretary, Fine Arts Club, IIT Kanpur (2015-16)**
  - Organized and coordinated events all year round for the Fine Arts Club and the cultural fest Antaragni
  - Represented IIT Kanpur at Rendezvous, IIT Delhi in 2014 and 2015 in fine arts events
- **Volunteer, National Social Service, IIT Kanpur(2014-15)**
  - Volunteered with Raktarpan and BloodConnect as a part of **National Social Service**, IIT Kanpur
  - Tasks included conducting blood donation camps, handling emergency requests and organizing awareness sessions

INTERESTS OUTSIDE ACADEMIA

Sketching and Painting, Wildlife Photography, Photography