Anmol Gulati

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Education

2012-2017 **Integrated Masters in Science**, *Indian Institute of Technology Kharagpur*, 7.39/10.0, Major: Mathematics and Computer Science.

Awards and Achievements

2016 - Qualified for the **ACM-ICPC World Finals, Thailand** as one of the 8 teams from India.
- Ranked **8th** in simulation league at **Humanoid Robocup, Germany**.
- Ranked **1st** in India in the onsite finals of **ACM Overnite**.

2015 - Won bronze in Mirosot league at the **FIRA Robot-soccer World Cup, South Korea**.
- Represented India and ranked **94th** at the **ACM-ICPC World Finals, Morocco**.
- Ranked **1st** in India in the onsite finals of **ACM Overnite**.

2014 - First Indian team to win a match at **FIRA Robot-Soccer World Cup, Beijing**.

2013 - Awarded Innovation in Science Pursuit for Inspired Research Scholarship (INSPIRE), Dept. of Science and Technology (DST), Government of India.

Publications

2017 Anmol Gulati and Kumar Agrawal. **Evaluating embeddings for Robot Language Learning through MUD Games. EMNLP Workshop, RepEval 2017**. [link]

Patents

2017, Google GP201334-US - **Systems and Methods for notifying an author of contextual suggested content.**

Work Experience | Software Engineer, Google Inc, India

June, 2017-Present **Grammar Error Correction**, *Docs Intelligence Team*, Shankar Kumar, Chris Alberti.
- Designed and developed system to automatically classify grammar edits into grammar error categories.
- Worked on ensembles and model distillation of transformer models for performance efficiency.
- Achieved SOTA results using weakly-supervised transformer-based models for grammar error correction.
- Improved precision of spell and grammar correction in Docs using semantic embedding models.

Sep, 2018-Present **Transfer Learning in NLP**, *Google Brain*, Ashish Vaswani, Niki Parmar.
- Working to improve model parameter-efficiency by conditionally learning transferable representations and connections over multiple tasks in both dense and sparse networks.

Talks

2017 Presented paper on evaluating embeddings for Robot Language learning at **RepEval, EMNLP Workshop, 2017**. [link]

2017 Gave a talk on Word Embeddings for NLP tasks at **PyCon Australia 2017**.[link]

Internships

Sep, 2016-Feb, 2017 **Student Incubator Intern**, *Gensim, Rare Technologies*.
- Gensim is a Python library for topic modelling with more than 8000 stars on Github.
- Contributed mutiple patches covering refactoring of word2vec and doc2vec classes to support saving, loading models and also indexing vectors-keyed-by-strings.
- Added a new module for varEmbed word embedding model into Gensim. [Commits]

May, 2016- July, 2016 **Software Engineering Intern**, *Google Inc, India*.
Docs Intelligence Team
- Investigated and developed a document classifier based on templates and document structure.
- Deployed classifier into Docs improving server throughput performance by 15%.
- Patent GP201334-US accepted on the system and methods developed using the classifier to notify a user for suggested content.

May-July, 2015 **Software Engineering Intern**, *Directi*.
Windows Team, Flock Messenger
- Worked on porting the Flock Windows Phone App to Windows Phone 8.1 SDK.
- The project involved addition of new customisable features in dashboard for Flock 2.0 update.

2014 - 2017 **Algorithmic Challenges Curator**.
- Created problems and editorials for algorithmic contests held on **Codechef**, **Hackerrank** and college's internal contests.

Academic Projects

2013- Feb, 2017 **AI Team Member**, *Kharagpur Robosoccer Students' Group*.
under Prof. Jayanta Mukhopadhyay, Prof. Sudeshna Sarkar, Dept. of Computer Science
- Designed strategies for 5vs5 differential driver robots playing soccer using a 3-tier software architecture.
- Implemented Multi-threaded CMA-Evolution Strategy to optimize various skills.
- Implemented Extended Kalman Filter and Savitzky-Golay Smoothening Filter for state estimation.
- Improved motion control and walking gait in Humanoid Robots based on evolutionary algorithms.
- The group, aims to develop autonomous robots playing soccer and has been representing India at the FIRA World Cup since 2013, Humanoid Robocup since 2016 and bagged Bronze at FIRA - '15, Korea.

Oct,2016- Jan, 2017 **Word Embedding Models based on Morphology**, for *CS60057*.
under Prof. Pawan Goyal, Department of Computer Science
- The project involved generating word embedding based on the morphology of the underlying root and affix.
- Established method to identify source and underlying affix sense for a given word.
- Investigated clusters of source-target senses based on earlier word embedding models.

Dec,2013- June, 2014 **A Faceted Recommendation System for Scientific Articles(FeRoSA)**.
under Prof. Pawan Goyal, Department of Computer Science
- The projected involved developing a muti-faceted paper recommendation system.
- Investigated trends of and correlations in the citation network of scientific articles.
- Implemented a modified pagerank algorithm on the citation network to generate recommendations.
- Generated citation tags using a maximum entropy classifier on selected linguistic features.

Development Projects

Feb-April, 2016 **Selene - A Youtube Music Recommendation App**, for *CS43002*.
under Prof. Pabitra Mitra, Department of Computer Science
- Developed a collaborative filtering based music recommendation app integrated with Youtube, Spotify and Soundcloud.

Feb, 2014 **Jigsaw Puzzle Solver**.
- Developed algorithm to solve jigsaw using different techniques based on Genetic Algorithm to solve jigsaw puzzle. [Github]

Skills and Expertise

Languages C, C++, Python, Java, Octave, Bash, Javascript, LaTeX
Others Git, Tensorflow, PyTorch, ROS, Qt, Numpy, scikit-image, OpenCV

Service & Other

2016 **Teaching Assistantship**, *Fundamental Algorithms: Design and Analysis*, NPTEL, online MOOC.
2014-2016 **Algorithmic Programming Teaching**, *Graph Theory and Data structures*, CodeClub, IIT KGP.
2012-2013 **National Service Scheme**, *Taught English in village primary school*, Midnapur Dist., Kharagpur.