Monisha Jegadeesan

Software Engineer, Google

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Education

2015-2020 **Dual Degree (B.Tech + M.Tech) in Computer Science and Engineering**
Indian Institute of Technology Madras, Chennai, India CGPA: 8.78

2015 **XII - Karnataka Board,** *KLE Society's Independent PU College, Bangalore* 97.30 %

2013 **X - ICSE,** *B P Indian Public School, Bangalore* 96.33%

Professional Experience

Dec 2022 - Present **Software Engineer, Level IV, Google LLC, New York**
- Working on Keep, a notetaking editor in Google Workspace.

Aug 2020 - Nov 2022 **Software Engineer, Level IV, Google India Pvt Ltd, Bangalore**
- Developing intelligent features for the Google Workspace Editors (Docs, Slides, Keep, etc) using my expertise on the products' client-side software, supporting tools and libraries, and natural language processing infrastructure.
- Using cutting-edge frontend tools like Web Assembly and Emscripten, and Google-internal technologies like j2Cl, client-side cross-platform frameworks and build systems, to develop user-facing features such as spellcheck in encrypted documents for five languages and writing style suggestions for English text.
- Formulating technical designs for independent end-to-end problems, driving cross-team collaboration, upholding software reliability practices, technical-debt resolution and documentation, and proactively identifying areas of future work.
- Guiding junior engineers on programming and software design tasks to enable timely delivery of products to customers.

May 2019 - July 2019 **Software Engineering Intern, Google India Pvt Ltd, Bangalore**
Worked on the Editors client-side software infrastructure to develop a user interface with control options to undo or provide feedback on the correction and a logging framework, for the Google Docs text auto-correction feature.

May 2018 - July 2018 **Research Intern, Big Data Experience Labs, Adobe Research, Bangalore**
Developed a mobile application for Text to Scene Conversion in Augmented Reality, based on novel research techniques for prediction of three-dimensional object sizes and positions from textual features.

Research Experience

Sep 2019 - May 2020 **Paraphrase Generation with a Bilingual Model and Continuous Embeddings**
Master's Thesis, ***Language Technologies Institute, Carnegie Mellon University***
Machinated a novel technique for paraphrase generation using the von Mises-Fisher (vMF) Loss on a transformer network, and showed that it produces superior paraphrases as compared to the log-likelihood model by employing bilingual data to induce zero-shot paraphrasing, guided by *Prof. Yulia Tsvetkov*.

May 2017 - July 2017 **Cognitive Approach to Natural Language Processing**
Research Intern, ***Department of Computer Science and Automation, Indian Institute of Science (IISc), Bangalore***
Developed a cognitive text parser that combines syntactic and semantic approaches, to process textual data into cognitive structural representations, to be used as a feature extractor for downstream NLP tasks, and demonstrated the correlation of the extracted cognitive features with semantic and syntactic text features, guided by Prof. Veni Madhavan.

Publications and Patents

[Publication and Poster] **Improving the Diversity of Unsupervised Paraphrasing with Embedding Outputs (Paper, Poster)**
Monisha Jegadeesan*, Sachin Kumar, John Wieting, Yulia Tsvetkov*
In **Workshop on Multilingual Representation Learning**,
The 2021 Conference on Empirical Methods in Natural Language Processing (**EMNLP 2021**)

[Publication and Poster] **Adversarial Demotion of Gender Bias in Natural Language Generation (Paper, Poster)**
Monisha Jegadeesan
In **ACM CODS-COMAD 2020** - Young Researchers' Symposium

[Poster] **ARComposer: Authoring Augmented Reality Experiences through Text (Poster)**
Sumit Kumar, Paridhi Maheshwari, ***Monisha Jegadeesan****, Amrit Singhal, Kush Kumar Singh, Kundan Krishna*
In ACM User Interface Software and Technology Symposium 2019 (**ACM UIST 2019**)

[Filed Patent] **Visualizing Natural Language through 3D Scenes in Augmented Reality**
Sumit Kumar, Paridhi Maheshwari, ***Monisha Jegadeesan****, Amrit Singhal, Kush Kumar Singh, Kundan Krishna*
Filed at the US PTO (Application Number: 16/247,235)

[Publication and Poster] **Leveraging Ontological Knowledge for Neural Language Models (Paper, Poster)**
Ameet Deshpande, ***Monisha Jegadeesan***
In **ACM CODS-COMAD 2019** - Young Researchers' Symposium

Projects

July 2019 - Dec 2019 **Graph Neural Networks for Extreme Summarization**
Indian Institute of Technology Madras
Formulated appropriate graph-based deep neural models for the Extreme Summarization (XSum) task with sentence-level and/or document-level graphs, and obtained better performance than simple recurrent and hierarchical models.

March 2019 - April 2019 **Risk-Sensitivity in Multi-Armed Bandits**
Indian Institute of Technology Madras
Surveyed and implemented risk-sensitivity methods for stochastic bandit problems, and upgraded the Explore-Then-Commit algorithm for VaR and cVaR measures with competent performance.

Aug 2018 - Dec 2018 **Leveraging Ontological Knowledge for Neural Language Models**
Indian Institute of Technology Madras
Incorporated Weight Initialization in learning word embeddings using the WordNet Ontology for a task in the *Construction* domain, resulting in a faster convergence rate and better representation of domain-specific terms.

July 2018 - Dec 2018 **Multimodal Dialogue Generation**
Indian Institute of Technology Madras
Developed a deep neural model to establish the positive effect of domain features in the performance of image retrieval in multimodal dialogue systems and explored the performance of attention and memory-based models with adaptations for multimodal dialogue and domain knowledge integration.

Oct 2018 - Nov 2018 **Risk-Sensitive Reinforcement Learning**
Indian Institute of Technology Madras
Empirically analyzed the existing methods for risk-sensitive reinforcement learning, tested the effectiveness of modified versions and proposed a new distance-based risk measure and algorithm for Gridworld.

Feb 2018 - March 2018 **Summarization and Keyword Extraction using TextRank**
Indian Institute of Technology Madras
Analysed the TextRank algorithm for keyword extraction with syntactic filters and augmentation via Explicit Semantic Analysis, and for text summarization with exploration of various textual similarity methods.

Nov 2016 - Dec 2016 **Scaling Graph Algorithms**
Indian Institute of Technology Madras
Implemented optimized graph algorithms for maximum network flow and finding a maximum matching in a bipartite graph for real data graphs with up to 10,000 vertices and 100,000 edges.

Nov 2017 **Skin Disease Diagnostic System**
Microsoft code.fun.do Contest, Indian Institute of Technology Madras
Designed a web application that attempts to diagnose skin diseases based on images of the user's skin powered by a deep neural model trained on a dataset created by scraping images from the web.

Sept2017 - Oct 2017 **Breakout Game**
Indian Institute of Technology Madras
Developed an Android application for the Breakout game with basic playing and scoring features.

Teaching Experience

Jan 2020 - May 2020 **Natural Language Processing - Course Teaching Assistant,** *Indian Institute of Technology Madras*
- Designed and evaluated theoretical and practical assignments on various topics in Natural Language Processing.
- Presented lectures on Edit Distance and the Cocke-Young-Kasami (CYK) algorithm, to a class of 70 students.
- Mentored sixteen pairs of students on research projects, with supervision through regular team-wise progress meetings.

Courses

[Statistical Learning] Advanced Deep Learning, Deep Learning, Machine Learning, Natural Language Processing, Reinforcement Learning, Multi-Armed Bandits, Probabilistic Graphical Models, Computational Models of Cognition

[Curriculum] Computer Networks, Database Systems, Operating Systems, Data Structures and Algorithms, Object-Oriented Programming

[Mathematics] Probability-Statistics-Stochastic Processes, Discrete Mathematics, Linear Algebra, Graph Theory

Skills

Languages C, C++, C#, Java, Python, HTML, CSS, Javascript, Web Assembly

Tools Unity, ARCore, Android Studio, Stanford CoreNLP, Git, Bootstrap, jQuery, Emscripten, Blaze, j2Cl

Libraries NLTK, django, scipy, pandas, sklearn, gensim, keras, tensorflow, pytorch

Scholastic Achievements

- First runner-up in the **AWS Deep Learning Hackathon** held during Shaastra 2018, IIT Madras:
  Developed a prototype for image-translation of English text on signboards and posters into vernacular languages.
- **State Rank 17** in Karnataka Common Entrance Test for Engineering, 2015, out of approximately 1.2 lakh students.
- Topped respective academic institutions in both **Class X and Class XII** board exams.

Positions of Responsibility

June 2019 **Organizer, Management Team,** *Tech Intern Connect,* Google India Pvt Ltd, Bangalore

- Member of the central managing committee that organized a networking event hosting technology interns from the city.

June 2016 - Dec 2016 **Technical Operations Coordinator,** *Shaastra 2017,* Indian Institute of Technology Madras

- Developed the front-end components of major websites and internal portals for the annual technical fest of IIT Madras.

Extra Curricular Activities

Cultural Trained in and have performed the Indian classical dance form of Bharatanatyam for eight years.

Sports Part of NSO (Institute Sports) Basketball during the first year of engineering (2015-2016).