

Ishika Agarwal

669-289-9879

<https://www.linkedin.com/in/ishikaagarwal/>

boilermakerishika@gmail.com

Cupertino, CA

<https://github.com/agarwalishika>

Education

MS, University of Illinois, Urbana-Champaign

Aug 2022 – Present

Major: Computer Science (emphasis on ML research)

- Relevant courses: Applied Machine Learning, Deep Learning, Adv. Algorithms, Adv. Information Retrieval, Deep Generative and Dynamic Models, Statistical RL, ML + Data Systems.
- Diverse Text Generation using Variational Transformers by Ishika Agarwal, Priyanka Kargupta, Bowen Jin, and Akul Joshi: We are exploring two downstream tasks that can benefit from diverse text generation: question generation and common-sense generation. For question generation, we are given a document and the task is to generate diverse questions. For common-sense generation, we are given a few keywords and we have to generate sensible sentences from those words. We are using a transformer to learn the text distribution and variations methods (such as a variational autoencoder and a diffusion model) to ensure diversity.
- QuickAns – a Virtual Teaching Assistant by Ishika Agarwal, Shradha Sehgal, Varun Goyal and Prathamesh Sonawane: QuickAns is a virtual teaching assistant designed to help course staff who use Campuswire as their Q&A platform. It reads Campuswire posts from digest emails and sends a potential answer to the course staff. At this stage, the course staff can review the answers for any logistical issues and answer a student's question in a matter of minutes. The question answering module is fine-tuned to the course content so it can provide accurate answers within context.

BS, Purdue University

July 2019 – May 2022

Major: Computer Science with a concentration in Machine Learning

- Final GPA: 3.88, Dean's list
- Relevant courses: Data Structures (Java), Computer Architecture (C), Systems Programming (Linux), Data Mining and Machine Learning (Python), Algorithm Analysis, Web Information Search and Management
- Teaching Assistant for Java Programming and C Programming

Skills

- Languages: Java, Python, C, C#, R, JavaScript, TypeScript
- Machine Learning Frameworks: Keras, Open AI Gym, Mujoco, Jupyter, TensorFlow, Pytorch
- Tools & Frameworks: Git, GNU Debugger, Java Profilers, Tomcat, Maven, Docker, Postman
- Oracle Certified Associate Java Programmer

Experience

Research Assistant – University of Illinois, Urbana-Champaign

Aug 2022 – Present

RA in Professor [Hanghang Tong](#)'s IDEA Lab researching in Graph ML. Below are the projects I am working on:

- Active Graph Anomaly Detection using Bi-Level Optimization by Ishika Agarwal, Qinghai Zhou and Hanghang Tong: We are exploring how to find anomalies in graph data using active learning, generative models and bi-level optimization. Given a graph with nodes, node attributes, edges and an oracle, we will try to learn a strong enough autoencoder that can learn the distinction between anomalous and benign nodes. Similar to real life, we do not have labels, but we have a human annotator who can make an educated guess for the label. From the human annotator, we will receive the label and their confidence (percentage) – we claim that we can use the soft label to learn highly accurate hard labels.
- Neural Active Learning: Online Learning Meets Multi-armed Bandits by Yikun Ban, Ishika Agarwal, Arindram Banerjee and Hanghang Tong: We aim to solve k-classification using active, multi-armed bandits. MAB agents can take a lot of space and time to perform k-classification (due to arm size/neural network size). However, by combining the dual exploitation-exploration structure of MAB's and the computational efficiency of active learning, we can achieve better results than either method while keeping the running time low.

Software Engineer – Cisco WebEx

Feb 2022 – Aug 2022

Handled customer cases by debugging meeting issues and deploying fixes. I also improved meeting features and mentored incoming summer interns. I trained coworkers in different teams on how to develop an internal debugging tool.

Research Assistant – Purdue University

May 2021 – Feb 2022

RA in Professor [Suresh Jagannathan](#)'s Lab. Researched Safe Hierarchical Reinforcement Learning.

- [HiSaRL: A Hierarchical Framework for Safe Reinforcement Learning](#) by Zikang Xiong, Ishika Agarwal and Suresh Jagannathan: We want to create a reinforcement learning training algorithm that is less resource intensive, more efficient and guarantees safety. This can be applied in the robotics setting where we want a robot to solve a maze. The unsafe regions would be the walls and obstacles of the maze. To train, we employ a hierarchical architecture where the higher-level algorithm finds the most optimal path from a start to an end point in a maze and, the lower-level algorithm controls the robot's movements from state to state. We also use Lyapunov functions to minimize the amount of variation between the two levels.

In this project, I developed a stable, hierarchical-based training algorithm and conducted tests on various agents to increase performance. I also wrote the high-level code, generated, and collected training data to analyze performance. We published a paper to the SafeAI 2022 conference titled "[HiSaRL: A Hierarchical Framework for Safe Reinforcement Learning](#)".

Software Engineer Intern – Cisco WebEx

June – Aug 2021

Improved on the internal logging and debugging tool for WebEx meetings which displays meeting records. I implemented a filtering feature on top of existing code and revised flow design to improve memory bottlenecks for large meeting records.

Teacher Mentor – Stanford Code in Place program

April – May 2021

Conducted workshops, mentored section leaders, reviewed course content and ensure class quality.

Software Engineer, Summer Intern – Promega Corporation

June – Aug 2020

Designed and developed a scheduling system for the COVID-19 testing machine. Built a generic scheduling library to be used in the cloud backend (for connected machines) or embedded in the machine (for stand-alone machines). Conducted user interviews and documented requirements. Wrote libraries in C# .NET, with 100% unit-test coverage, and integrated it with the user interface.

Teaching Instructor – Stanford Code in Place program

May – June 2020

Tutored students Python by developing course content, conducting weekly classes and grading assignments.