

# Karan Samel

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<https://karans.github.io/>

My current research revolves around joining deep learning with symbolic reasoning to reduce the number of labels required. I have also worked on human in the loop learning, and knowledge graph incorporation into deep learning methods, and medical applications.

## EDUCATION

**Georgia Institute of Technology, Atlanta, GA**

*August 2019 - Present*

Ph.D. in Machine Learning - Advisor: Prof. Le Song

**Purdue University, West Lafayette, IN**

*August 2014 - May 2017*

B.S in Computer Science, Applied Statistics - Graduated with Highest Distinction

## EXPERIENCE

**Georgia Institute of Technology: Research Assistant**

*August 2019 - Present*

- Researching temporal and graph neural network architectures to predict disease progression with electronic health records.

**Astound: Data Scientist**

*July 2017 – June 2019*

- Researched and engineered human-in-the-loop machine learning systems to improve data quality. Method developed is optimized to reduce human annotator feedback while maximizing the performance of deep learning models. Resulting paper accepted at KDD'18.
- Developed transfer learning methods to improve a deep learning model performance given limited data.

**Undergraduate Researcher: Advertisement Real Time Bidding Predictions** *August 2015 – May 2017*

- Tested various deep learning architectures to predict customer clicks on the iPinYou advertisement dataset. Achieved high prediction scores even with sparse positive click data.
- Utilized an external GPU setup to speed up convolutional network training by a factor of 80.

## PUBLICATIONS

Active Deep Learning to Tune Down the Noise in Labels

**K. Samel**, and X. Miao

In *Proceedings of the 24th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD'18)*. ACM, New York, NY, USA, 685-694. [\[PDF\]](#)

Predicting Advertisement Clicks Using Deep Networks: Interpreting Deep Learning Models

**K. Samel**, X. Wang, and Q. Liu

In *The Journal of Purdue Undergraduate Research*: Vol. 7, Article 8. [\[PDF\]](#)

#### GRANTS & AWARDS

- Georgia Tech President's Fellowship (2019 - 2023)
- NSF GRFP Honorable Mention: Relational Recursive Models for Trustable Medical Diagnoses (2019)
- KDD Startup Research Award (2018)
- NSF Mentoring Through Critical Transition Points in the Mathematical Sciences: Purdue Statistics Living Learning Community (Grant No. 1246818) (2016 - 2017)
- Purdue Presidential Scholarship (Awarded for 2014 - 2018)

#### PENDING PATENTS

Active Deep Learning to Reduce Noise in Labels

**Karan Samel**, Xu Miao, Zhenjie Zhang, Masayo Iida, and Naghi Prasad

Framework for Building and Sharing Machine Learning Components

Xu Miao, Masayo Iida, Zhenjie Zhang, **Karan Samel**, Adil Mohammed, Baiji He, Ankit Arya, and Naghi Prasad