

# Abhinav Kumar

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## Education

**Georgia Institute of Technology** Atlanta, GA

**May 2021**

- Candidate for Bachelor of Science in Industrial Engineering – Data Science
- Minor in Computer Science – Intelligence
- Junior
- GPA: 4.00

## Experience

**Engineering Co-op – UPS**

**January –  
August 2018,  
August 2018-  
December  
2018**

- Network Optimization with analysis of current flight routes and possible alternatives using **SQL and Excel**, saving UPS over \$30,000 in transportation expenses
- Machine Learning for freight transit-time prediction using random forest, boosting, and deep neural network models developed with **R, Keras, and XGBoost**
- Analyzing causes of delays in the UPS freight network using **Scikit-Learn**
  - Created **SQL Server** database system to automatically analyze new data and provide queries to facilitate deeper analysis
- Introduced the team to **Python** for data science, **Tensorflow, Keras, Deep Learning, and Jupyter Notebooks**
- Created **Tableau** visualization for all peak-time truck movements in the United States, highlighting problematic shipments and allowing for targeted problem-solving during high volume periods

**Transportation Analytics and Operations Research Co-op – UPS**

**May – August  
2019**

- Improved data quality by adding anomaly detection utilizing statistical changepoints
- Independently led analysis of previously unexplored locations, opening up possibilities for forecasting volume on new section of UPS network using **XGBoost**
- Conducted research into alternate methods of forecasting and prediction ensembling, increasing accuracy and reliability of predictions through modifications to data preparation and model selection algorithms using **R, Prophet, and R forecast** packages
- Implemented Encoder Decoder **Deep Learning** model for forecasting UPS network volume using **Keras** and **R**

**HackGT Technology Team Member, Project Leader – Georgia Tech**

**December 2018 -  
present**

- Led improvement of SlackBot interface used to grade applications using **Express.js, MongoDB, and Slack API**
- Created Team Formation application used to facilitate team creation at hackathons using **Express.js** and **React**
- Currently working on intelligent **NLP** chatbot for use by hackathon participants to answer common participant questions using **Express.js** and **Slack API**

**Undergraduate Research Assistant – Machine Learning and Perception Group – Georgia Tech**

**August 2019 -  
present**

- Working on projects relating to **Deep Learning** and symbolic languages using **PyTorch**
- Implementing memory model used to reduce computation time for intensive applications (path planning, mathematical problem solving)

## Projects

**Intelligent Network Collision Avoidance – Vertically Integrated Project, Georgia Tech**

Developed a testing framework for evaluating different strategies for avoiding collisions on a wi-fi network. Implemented exponential back-off and Deep Q Network models using **Keras**. Developed skills relating to reading and analyzing research papers and an understanding of the research process.

**Golden Gate (TreeHacks 2019 Project)**

Developed Chrome extension that analyzes news articles and provides related articles, ranking them by their bias as well as providing contextualization information through additional reading on important entities mentioned in the article. Created using **Express.js, React, and Google Cloud NLP**

## Additional Skills

**Programming:** Java, C, AWS, Azure

**Machine learning frameworks:** Tensorflow

**Courses:** Artificial Intelligence, Optimization, Stochastics, Data Engineering, Data Structures and Algorithms, Statistics, Probability, Object Oriented Programming, Digital System Design

**Courses In Progress:** Computer Vision, Machine Learning, Intro to Database Systems, Regression and Forecasting, Modeling and Simulation

**Languages:** Native Proficiency in English and Tamil, Professional Working Proficiency in Spanish and Hindi

## Activities and Community Service

**Georgia Tech Agency (AI/ML Club)**

**2018 – Present**

**Co-Teacher at Chinmaya Mission**

**August 2019 – Present**