

# Abhinav Kumar

Undergraduate Student

Undergraduate student interested in novel research in deep learning and AI seeking research opportunities

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## EDUCATION

### Computer Science with focus on Intelligence and Modeling/Simulation

Georgia Institute of Technology, Atlanta GA

08/2017 - Present

4.00

#### Courses

- Deep Learning
- Intro to AI
- Optimization
- Computer Vision
- Differential Equations
- Intro to Robotics

## WORK EXPERIENCE

### Intern

NASA

01/2020 - 08/2020

#### Achievements/Tasks

- Implemented transfer learning pipeline using BERT and PyTorch to extract keywords from scientific publications
- Implemented module to crawl through Wikipedia articles and apply TextRank analysis to extract keywords from a Wikipedia subgraph
- Working on research publication connected to this work

### Undergraduate Research Assistant

Georgia Tech Machine Learning and Perception Lab

08/2019 - 08/2020

#### Achievements/Tasks

- Worked on research project combining symbolic representations and deep learning for automating solving of math problems
- Helped to develop approach as well as contributing to an in progress research paper associated with the project
- Used PyTorch to create library and testing framework for the project
- Currently continuing similar work with former members of the lab

### Project Leader/Technology Team Member HackGT

12/2018 - 12/2020

Georgia Tech student organization that organizes hackathons and computer science education/outreach events

#### Achievements/Tasks

- Led implementation of NLP system for hackathon application grading that reduced grading time on over 80% of hackathon applications using Flask and NLTK
- Led improvement of SlackBot interface used to grade applications using Express.js, MongoDB, and Slack API
- Led creation of intelligent NLP chatbot for use by hackathon participants to answer common participant questions using Express.js and Slack API

## SKILLS

Python



PyTorch



Deep Learning



Teamwork



Project Management



## OTHER PROJECTS

### Leveraging Reinforcement Learning for Trajectory Optimization (08/2020 - Present)

- Working on using reinforcement learning techniques to improve trajectory optimization for robotic locomotion in situations with contact. Using PyDrake with plans to incorporate deep reinforcement learning and A1 quadruped robot. Working with the Georgia Tech Laboratory for Intelligent Decision and Autonomous Robots

### Intelligent Network Collision Avoidance (01/2019 - 04/2019)

- Developed a testing framework as part of a Vertically Integrated Project team 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.

## LANGUAGES

English

Native or Bilingual Proficiency

Tamil

Native or Bilingual Proficiency

Spanish

Limited Working Proficiency

## INTERESTS

AI and Reasoning

Computer Vision

Reinforcement Learning

Deep Learning

Research