

# Akhil Nadigatla

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## EDUCATION

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### Carnegie Mellon University

*B.S. in Computer Science*

Pittsburgh, PA

August 2018 - May 2022 (*expected*)

- QPA: 3.48.
- Concentration in Machine Learning, Minor in Philosophy.

## RESEARCH

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### Towards Efficient Neural Zeroth-Order Optimization Algorithms

*CMU Machine Learning Department*

August 2021 – Present

*Pittsburgh, PA*

- Advised by Prof. Pradeep Ravikumar of the Statistical Machine Learning Group for the Honors Senior Thesis program.
- Investigating more efficient neural black-box optimization techniques in high-dimensional settings while making no assumptions about the underlying objective function.
- Exploring two novel algorithms (Neural Thompson Sampling and a Neural Upper Confidence Bound (UCB)-based algorithm), iterated upon using Stochastic Gradient Langevin Dynamics.

### Adversarial Robustness via Model Ensembles

*CMU Machine Learning Department*

October 2020 - May 2021

*Pittsburgh, PA*

- Advised by Prof. Pradeep Ravikumar and Arun Suggala of the Statistical Machine Learning Group for the Computer Science Research Practicum.
- Evaluated the effects of weighted ensembles of classifiers on adversarial robustness of deep neural networks.
- Witnessed a 1 to 2% (statistically significant) improvement in accuracy on perturbed samples from MNIST and CIFAR-10 datasets under a wide range of attacks.

## EXPERIENCE

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### Software Engineer Intern

*Splunk*

June 2021 - August 2021

*San José, CA*

- Worked on the Observability Cloud Analytics team to improve real-time streaming capacities and efficiency of platform that drives all metric transformations processed by the SignalFx products.
- Developed a novel workflow for large window, fine resolution tasks that increased capacity by ~3,500%, and cut job migration and restart times by ~700% by offshoring window data to external persistence.

### Student Lead

*CS Academy*

May 2019 - December 2019

*Pittsburgh, PA*

- Drove content creation, testing, and development of free platform for teaching computer science principles.
- Participated in development of features that improved ease-of-use, achieving a five-fold increase in active users.
- Led support and outreach team, and contributed to the organization of professional development seminars for instructors.

## SELECTED PROJECTS

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### SafeEvents | *Python, Firebase*

August 2020 - November 2020

- Developed a mobile event tracking application providing COVID-19 risk estimates by locality using active data from Georgia Tech-developed tool.
- Used at University of Minnesota - Twin Cities and University of Texas - Austin.

### Dendrogram Generator | *R*

June 2020 - August 2020

- Created pipeline to convert DNA marker information for different crop varieties into dendrograms to aid in trait association and breeding, all wrapped in an easy-to-use GUI.
- Used at the International Institute for Tropical Agriculture.

**ConvoCoach** | *Python, GCP*

March 2019 - June 2019

- Developed application - along with four colleagues - to assist and improve the capabilities of autistic individuals with daily conversations.
- Utilized cloud NLP, image association, speech recognition and synthesis tools to drive predictive and dynamic conversations.

**PyStocks** | *Python*

October 2018 - December 2018

- Constructed a trading simulator intended as an introduction to the financial markets.
- Utilized live stock and forex data to make intelligent predictions using stochastic modeling.

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**TEACHING**

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**Undgraduate Teaching Assistant**

August 2021 - December 2021

*CMU School of Computer Science**Pittsburgh, PA*

- Served as a TA for the Research and Innovation in Computer Science (07-300) course. Led lectures and recitations, graded assignments, and held regular office hours.

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**SELECTED COURSEWORK**

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**Computer Science:** Algorithm Design and Analysis, Distributed Systems, Foundations of Programming Languages, Foundations of Software Engineering, Parallel Data Structures and Algorithms.

**Machine Learning:** Machine Learning with Large Datasets, Machine Learning Ethics and Society, Introduction to Machine Learning.

**Mathematics:** Modern Regression, Probability Theory.

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**TECHNICAL SKILLS**

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**Languages:** Python, Java, C, C++, Standard ML, OCaml, R, x86 Assembly.

**Frameworks:** PyTorch, JAX, TensorFlow, Keras, Scikit-Learn, Spark.

**Tools:**  $\LaTeX$ , Git, Vim.

**Platforms:** AWS, Azure, GCP, Docker.

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**ACHIEVEMENTS**

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**CMU SCS Dean's List:** High Honors (Fall 2020, Fall 2021.)

**William Lowell Putnam Mathematical Competition:** Top 500 (Fall 2019).

**TartanHacks:** Best Social Welfare Hack (Spring 2019).

**President's Award of Kenya:** Gold Standard (awarded by H.E. Uhuru Kenyatta).