

# NICHOLAS PETOSA

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<https://devpost.com/petosa> • <https://github.com/petosa>

## EDUCATION

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- AUG 2018 – DEC 2019 **Georgia Institute of Technology – M.S. in Computer Science – GPA: 4.0/4.0**
- Specialization in Machine Learning.
- 2015 – 2018 **Georgia Institute of Technology – B.S. in Computer Science – GPA: 4.0/4.0**
- Concentrations in Artificial Intelligence and System Architecture.

## EXPERIENCE

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- SUMMER 2019 **Two Sigma – Software Engineer Intern – Alpha Insights**
- **Machine Learning.** Awaiting authorization to discuss details of intern project.
- SUMMER 2018 **Microsoft – Software Engineer Intern – PowerBI Advanced Analytics**
- **Deep Learning.** Designed and trained a deep Keras LSTM network to predict English descriptions of arbitrary data visualizations with 95% accuracy. Trained on synthetic data and validated on real data.
  - **Transparent Modeling.** Created an application that won 2<sup>nd</sup> place in the AI & Ethics category of Microsoft's 2018 week-long global company hackathon. The application trains and visualizes deep PyTorch general additive models (GAMs) to build transparent, accountable models of data.
- SUMMER 2017 **Amazon – Software Development Engineer Intern – Customer Account Protection**
- **Machine Learning.** Integrated a random forest classifier into Amazon's production sign-in systems, which handles millions of sign-ins per day. The model predicts whether clusters of customers are malicious and suggests disciplinary action to Amazon fraud investigators. Used scikit-learn and Weka.
  - **Data Visualization.** Created interactive suspicious account cluster visualization using d3.js. Integrated internally into dashboard used by hundreds of Amazon fraud investigators.
- SUMMER 2016 **Cisco – Software Engineer Intern – Global Support Experience**
- **Data Science.** Created an internal web app using R and Shiny for measuring partner performance. Cisco executives estimated the tool would save \$150k per quarter.
  - **Web Development.** Redesigned a service wrapper with high visibility within Cisco with Java Spring.

## RESEARCH

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- JAN 2018 - PRESENT **Graduate Research Assistant – Georgia Tech – Quantitative Software Research Group**
- Research the application of deep learning techniques to quantitative finance under Dr. Tucker Balch, focusing on time series classification and deep reinforcement learning.
  - Implemented a deep Q-learning trading agent from scratch using Keras and Zipline. Agent was trained using walk-forward validation over historical price data. Results were presented at QuantCon 2018.
  - Implemented AlphaZero in Python, investigating applications to a stock exchange simulation.
- AUG 2016 - AUG 2017 **Undergraduate Research Assistant – Georgia Tech – Sherrill Group**
- Designed, developed, and implemented a Python Flask service and MongoDB back-end for PSI4, a popular quantum chemistry research package. Published undergraduate thesis on this research.

## ADDITIONAL EXPERIENCE

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- AUG 2018 - PRESENT **Graduate Teaching Assistant – Georgia Tech – CS 7646: Machine Learning for Trading**
- Grade assignments, answer questions, and hold regular office hours for the course.
- SPRING 2017 **Google CodeU Participant**
- A Google invite-only program. Worked remotely with a small group of peers to create a messenger web app over the 12-week program. Participated in regular code reviews with a Google engineer.

## AWARDS

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2nd Place (Home Depot Deep Learning Hackathon 2018) • FINRA Data Analysis Prize (HackGT Hackathon 2017)  
1st Place (Coca-Cola Hackathon 2016) • Firebase Prize (MHacks Hackathon 2016) • 1st Place (SwampHacks Hackathon 2016)

## SKILLS

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**Programming Languages** – Python, Java, JavaScript, C

**Tools & Platforms** – PyTorch, Keras, TensorFlow, CNTK, d3.js, scikit-learn, Flask, Git

**Areas of Interest** – Quantitative Finance, Deep Learning, Machine Learning, Artificial Intelligence, Data Visualization