Andrew Wang

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Education and Relevant Coursework

Cornell University (Current) Expected May 2024

Bachelor of Arts in Computer Science and Mathematics, 3.9 GPA *Ithaca, NY*

- Object Oriented Programming and Data Structures, Functional Programming, Algorithms, Combinatorial Optimization, Stochastic Processes, Machine Learning, Real Analysis, Linear Algebra, Probability Theory

Experience

NSF Research Experience for Undergraduates June 2022 - Aug 2022

National Science Foundation, University of Arizona *Tucson, AZ*

- Investigated classification robustness of objects pertinent to self-driving cars in natural/real-world settings
- Implemented a shadow attack and defense mechanism on a state-of-the-art sign recognition algorithm
- Deployed neural networks to Microsoft Azure GPU clusters for training and testing
- Optimized and translated code to work with a self-driving car in the lab and test-drove the car in a closed circuit test environment

Undergraduate Research Assistant March 2021 – Current

Cornell Civil and Environmental Engineering *Ithaca, NY*

- Assisted Professor Samitha Samaranayake and Carlos Martinez in analysis of ride-share optimization algorithms
- Implemented existing algorithms from published papers to gain insights into integrality gap of ride-share linear programming algorithm and presented output
- Built a scalable and efficient Python simulator for ride shares to gain insight into causes behind fractional trip assignment. Model included generating of trips, requests, and vehicle locations based on method parameters, pruning of unfeasible trips based on an α factor from optimal trip, and running a relaxed integer linear program to produce optimal trip assignment

Teaching Assistant (TA) - CS 4780, 3110 August 2021 – Current

Cornell Computing and Information Sciences (CIS) *Ithaca, NY*

- TA for Machine Learning, Consultant for Functional Programming; awarded CIS TA Recognition Award twice
- Answered over 33% of all student questions posted on class Q & A board
- Tier 2 Tech Support Lead: managed other tech support consultants and answered specific OCaml-related issues

Personal Projects

Deep Learning Markov Chain Inventory Modeling | *Python, TensorFlow* Mar 2022

- Used Monte Carlo simulations to generate a discrete-time Markovian inventory management setup
- Built a neural network to learn optimal parameters for use in a Markovian model
- Predicted estimated profits for 50,000 days for every possible starting inventory using the optimal parameters and Markov modeling with a 95% confidence interval

Foreign Car Detector | *Python, NumPy, OpenCV* Jan 2021

- Developed a routine to process video input from a Raspberry Pi camera and store the corresponding metadata in a SQL database; incorporated Haar cascades object detection algorithm to detect cars
- Compared the similarity of vehicle photos using mean squared error combined with structural similarity index metrics

Cornell ClassRoster Bot | *Discord.py, Python, BeautifulSoup, Asyncio, Git* Jan 2021

- Developed a Discord bot to pull information from Class Roster and pretty-print it in a message to users for easy access when talking about course schedules, with seamless access to class discussion on Cornell's subreddit and CUReviews (Cornell Class Review site)
- Implemented parallelized webscraping using the Asyncio library to speed up response times
- Deployed bot to Virtual Private Server and wrote Unix scripts to automatically pull bot updates from Github

Technical Skills

Languages: Python, OCaml, Java, SQL, C, Javascript/Typescript, HTML, CSS
Frameworks and Tools: NumPy, Gurobi, pandas, NetworkX, OSMNX, Scikit, BeautifulSoup, PostgreSQL, PyTorch, React.JS, Unix and shell