(864)501-6630
COSTA.HUANG@OUTLOOK.COM
GITHUB.COM/VWXYZJN
LINKEDIN.COM/IN/COSTA-HUANG
WWW.COSTA.SH

# Shengyi "Costa" Huang

## QUALIFICATION SUMMARY

- CS Ph.D. student in (DRL) Deep Reinforcement Learning with 2+ years of in-depth research.
- Proficient in Python, Numpy, Pytorch for building Machine Learning models.
- Authored a DRL library CleanRL with algorithms such as Deep-Q Networks and Proximal Policy Gradient. Received 170+ upvotes from Reddit and 30+ stars from Github.
- Streamline experiment version management that keeps tracks of 200+ experiments with logging of hyper-parameters and important metrics. Selected example see https://cleanrl.costa.sh.
- Trained for *engineering* and *theory* due to industry experience and my B.S. in Mathematics.

## EDUCATION

**Drexel University**, Philadelphia, PA

*Ph.D. in Computer Science* **Expected Jun 2023**

- Advisor: Dr. Santiago Ontañón
- Research Area: Game Artificial Intelligence with Deep Reinforcement Learning

**Furman University**, Greenville, SC

*B.S in Computer Science* **May 2018**
*B.S in Mathematics*

## EXPERIENCE

**Drexel University**, Philadelphia, PA

*Ph.D. Researcher* **Sep 2018 − Present**

- Read and reproduce the most recent literature on Reinforcement Learning and Strategy Games.
- Meet with my advisor weekly to brainstorm research ideas to explore.
- Develop game representations for an experimental Real-time Strategy Game MicroRTS and run the state-of-the-art DRL algorithms to train agents for various tasks.
- Maintain a DRL library CleanRL with streamlined cloud experiment management that records hyper-parameters and important metrics such as entropy and losses.
- Iterate hundreds of experiments to validate novel research ideas and techniques.

*Graduate Research Assistant* **Oct 2019 − Present**

- Work with DARPA on a simulated game that deploys drones for missions.
- Write game evaluation functions to model the concept of missions.
- Input high-level strategic objectives and generate specific missions.

*Graduate Teaching Assistant* **Sep 2018 − Jun 2019**

- Tutored students with Python and Java lab assignments for 10+ hours a week.
- Collaborate with students and gave advice on their final projects.
- Graded students' homework and provided detailed feedback.

**Carely, Inc.**, Greenville, SC

*Backend Developer* **Jun 2018 − Sep 2018**

- Developed the API server for the web and mobile platforms by using Go and MySQL.
- Perfected the development environment cross-platforms by using Docker.
- Coordinated with the team through Jira, Slack, Github, and OpenAPI(Swagger).

**Furman University**, Greenville, SC

*Computing in Community Deveoper* **Oct 2017 − Feb 2018**

- Developed an application that collects the pronunciation of student names for the commencement.
- Collaborated with the university registrar and IT department.
- Utilized Go and Algolia for back-end to build interactive search.

*Teaching Assistant*                                                                  **Aug 2017 − Dec 2017**

- Tutored 30+ students on Web Programming topics: JavaScript, VueJs, Webpack, Vuetify, AWS, PHP, Go, MySQL, Docker, REST API, Python, and Laravel.
- Helped the professor with preparing lab materials with respect to the latest tools and projects.
- Collaborated with the professor to create the course website using the latest front-end tools.

*Research Fellow*                                                                     **Jun 2017 − Aug 2017**

- Authored a Python package, StreetTraffic, that collects more than 100 GBs of traffic flow data.
- Worked with Dr. Chirs Healy to conduct research on travel plan recommendations.
- Set up proper unit-tests and documentation by using Sphinx.

---

**PROJECTS**

### (2019) CleanRL
*Reinforcement Learning Library with Cloud Experiment Management*
cleanrl.costa.sh                                    • Python                    ★ 38

### (2019) Gym-MicroRTS
*The OpenAI Gym wrapper for MicroRTS for DRL research*
github.com/vwxyzjn/gym-microrts                     • Python                    ★ 4

### (2018) Portwarden
*Create Encrypted Backups of Your Bitwarden Vault with Attachments*
github.com/vwxyzjn/portwarden                       • Go                        ★ 37

### (2018) Jupyter Disqus
*Add Disqus to Jupyter Notebook*
github.com/vwxyzjn/jupyter_disqus                   • Python                    ★ 11

### (2017) StreetTraffic
*Collects the traffic flow data of your favorite routes and cities*
streettraffic.org                                   • Python                    ★ 11

### (2017) SC2AI
*Integrated Tensorforce and OpenAI Gym to train SC II game agents*
costa.sh/SC2AI                                      • Jupyter Notebook          ★ 12

### (2017) LP Optimization
*Linear Programming for Finding the Optimal Scheduling by Using Gurobipy*
costa.sh/LP_optimization_python                     • Python

### (2016) Sentiment Analysis
*Used RNN and LSTM to classify movie reviews based on sentiment*
costahuang.me/Sentiment-Analysis-LSTM               • Python

---

**SKILLS**   Python, Pytorch, Tensorflow, Numpy, Git, Linux, Statistics, Go, Docker, JavaScript, SQL.

---

**PUBLICATIONS**

**Huang, S.**, Ontañón, S., "Comparing Observation and Action Representations for Reinforcement Learning in $\mu$RTS", *AIIDE Workshop on Artificial Intelligence for Strategy Games*, October 2019

**Huang, S.**, Healy, C., "StreetTraffic: a Library for Traffic Flow Data Collection and Analysis", *ACMSE 2018 Conference*, March 2018

---

**RELEVANT COURSES**   Artificial Intelligence, Machine Learning, Computer Vision, Computer Graphics, Algorithmic Game Theory, Software Design, Statistics, Probability, Linear Algebra, Real Analysis, Abstract Algebra, Fundamentals of Databases, Developing User Interfaces