Shuze Liu

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Education

Yale University *May 2020*
M.S. , Computer Science
Cumulative GPA: **3.75/4.0**

Rensselaer Polytechnic Institute (RPI) *May 2019*
B.S. , Computer Science
Cumulative GPA: **4.0/4.0** (Summa Cum Laude)

Publication

- **Shuze Liu**, Farhad Mohsin, Oshani Seneviratne, Lirong Xia. Strengthening Smart Contracts to Handle Unexpected Situations. **Published on IEEE International Conference on Decentralized Applications and Infrastructures**. [Link] [PDF]

Experience

Alibaba Group, DAMO Academy *June 2019 – Aug. 2019*
Algorithm Engineer Intern *Hangzhou, China*

- Developed a program in Python to test the actual performance of twelve convolutional neural networks on the server.
- Implemented ShuffleNet v2 by MxNet in Python. Trained this neural network on clothing pictures.
- Achieved 91.8 % accuracy on clothing classification problem by tuning the hyperparameters.
- Developed an API for this network to allow the City Brain project to input any size of pictures and get their labels.

Strengthening Blockchain Code to Handle Unexpected Situations *May 2018 – May 2019*
Researcher at RPI (Project funded by IBM) *Troy, New York*

- Designed a voting mechanism with an action list to handle unexpected situations in blockchain code.
- Applied Peer Prediction algorithm to reward peers and motivate them to report their true thoughts.
- Augmented this mechanism with generic principles. Created generic APIs for incoming blockchain code.
- Enhanced this mechanism using machine learning to predict peers' preferences.

Projects & Coursework

Computational Intelligence for Games *Aug. 2019 – Dec. 2019*

- Implemented Monte Carlo Tree Search with UCB sampling rule to compute the optimal strategy for Kalah game.
- Implemented an optimal player for finite, impartial, normal combinatorial games based on Sprague-Grundy Theorem.
- Used a linear programming solver to find and verify equilibrium for simultaneous games.
- Created an artificial neural network architecture and trained it for playing solitaire Yahtzee.

Computation and Economics *Aug. 2019 – Dec. 2019*

- Proved in online learning setting, the strategy of following the perturbed leader can achieve regret $O(\sqrt{KT})$.
- Proved the 1/2-approximation in Prophet Inequality is tight and cannot be improved.
- Proved a lemma of envy-free allocation and used it to prove the existence of equilibrium where the outcome of Generalized Second-Price auction matches truthful auctions.

Artificial Intelligence in Pac-Man *Jan. 2019 – May 2019*

- Developed informed search algorithms to help Pac-man find food dots. Designed heuristics to increase efficiency.
- Abstracted game states in multi-agent Pac-Man games. Implemented Bayesian Networks to infer agents' positions.
- Developed q-learning, a reinforcement algorithm to learn the optimal strategy for Pac-Man.

Advanced CS Courses & Teaching

Ongoing: Advanced Probability, Stochastic Processes, Natural Language Processing.
AI & Theory Courses: Artificial Intelligence, Economics and Computation, Deep Learning, Computational Intelligence for Games, Game Theory, Computability and Logic, Graph Theory, Advanced Computer Algorithms.
Programming Courses: Operating Systems, Programming Languages, Database Systems, Software Engineering, Software Development & Documentation, Compiler Principles, Object-Oriented Programming.
Undergraduate Teaching Assistant: Intro. to Algorithms (Spring 2019), Intro. to Logic (Fall 2018).

Skills & Scores

- Programming Languages: Python, C/C++, Java, Javascript, SQL, Pascal, Prolog, Scheme.
- Tools: TensorFlow, MxNet, Pytorch, Hyperledger Composer, LaTex, Hugo.