

Sha (Stanley) Lai

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EDUCATION

Boston University (Boston, MA) — *PhD in Computer Science: Jan. 2019 - present*

Boston University (Boston, MA) — *Master of Science in Computer Science: Sept. 2017 - Jan. 2019; GPA: 3.62*

- Relevant Courses: Distributed System, AI, Machine Learning, Advanced Algorithms, Databases, Data Mining

University of Washington (Seattle, WA)— *Bachelor of Science in Mathematics: Sept. 2012 - Dec. 2016; GPA in the last two years: 3.6*

- Relevant Courses: Computer Programming, Data Structures & Algorithms, Programming Concepts & Tools, Computational Methods for Data Analysis, High Performance Scientific Computing, Real Analysis, Complex Analysis, Probability, Linear Algebra, Linear Optimization

TEACHING EXPERIENCE

Teaching Fellow - Artificial Intelligence course

Boston, MA | Sept. 2019 - Dec. 2019

- Presented a lecture to over a hundred students.
- Designed homework and exam problems.
- Led biweekly group discussion sessions.
- Guided students on course projects.

RESEARCH EXPERIENCE

Graduate Researcher - Artificial Intelligence and Emerging Media (AIEM) Research Group

Boston, MA | Feb. 2018 - Present

- Co-authored paper.
- Collaborated with a team of 5 students and 4 professors to perform empirical analysis for theorems.
- Provided technical support such as organizing data, implementing interfaces, and processing results for crowdsourcing experiments.
- Gathered and reviewed related work for journal paper.
- Reviewed, revised, implemented, greatly optimized, and improved machine learning algorithms.
- Coordinated weekly group meetings and discussions.

Undergraduate Researcher - Washington Experimental Mathematics Lab (WXML) Research Group

Seattle, WA | Dec. 2016

- Collaborated with interdisciplinary team of 5 peers and professor to improve the accuracy as well as efficiency of a computer vision program.
- Taught programming concepts to over 30 students in a variety of fields.
- Led and presented lectures and workshops to audiences of 5 twice.

Publications

- **BUOCA: Budget-Optimized Crowd Worker Allocation:**
<https://arxiv.org/abs/1901.06237>
- **Accurate, fast, but not always cheap: Evaluating “crowdcoding” as an alternative approach to analyze social media data:**
<https://journals.sagepub.com/doi/abs/10.1177/1077699019891437>

PROJECTS

BUOCA: Budget-Optimized Crowd Worker Allocation — *A research project in ALEM team: Mar. 2018 - Present*

- Provided analytical support for theorem proving.
- Cleaned and organized data systematically.
- Thoroughly reviewed work from previous peers, and then rebuilt a machine learning algorithm to achieve better results.
- Implemented, revised, greatly optimized, and improved the algorithm to achieve desired outcomes.
- Co-authored a journal paper.

Digital Pet — *A course project in Distributed System: Mar. 2018 - May 2018*

- Studied and explored blockchain technique.
- As a team of 4, designed and implemented a program to simulate the process of raising and trading digital pets across the internet using blockchain technique.
- Authored the final report.

Classification of Chess Boards — *A course project in Machine Learning: Mar. 2018 - May 2018*

- Collaborated with a team of 3 to pre-process raw data that describe the orientations of chess games.
- Explored and implemented a support vector machine classifier to predict the outcome of a game.
- Finetuned the algorithm to achieve better results
- Contributed to presentation and the final report.

Atropos Player — *A course project in Artificial Intelligence: Apr. 2018*

- Designed an AI agent, including a static evaluator and a combination of adversarial search algorithms, for a board game named Atropos.
- Implemented and optimized a computer program to play the Atropos game.
- Tested the agent against another student's implementation and further improved the AI strategy.

IKEA Furniture Detector — *A course project in Artificial Intelligence: Mar. 2018 - Apr. 2018*

- Labeled and validated image data.
- Explored YOLO, a pre-trained neural network specialized in computer vision.
- Collaborated with a team of 2 to explore and to modify YOLO to detect and locate furnitures in images.

Graphlopedia — *A mathematics database project under Washington Experimental Mathematics Lab(WXML): Sept. 2016 - Aug. 2017*

- Continued improving the graph extractor, a computer vision project.
- As a group, determined a goal to construct a database and a search tool for graph-related mathematical papers.
- Constructed an initial set of data entries in the JSON format.
- Attempting to embed the project into an online server.

Mathematical Graph Extractor — *A computer vision project: Jun. 2016 - Aug. 2017*

- Studied numerous concepts about computer vision and obtained advice from experts.
- Constructed a blueprint of the project and identified the task for each step.
- Built a prototype using Python and tested with simple input cases.
- Introduced and designed algorithms to handle complicated graphs and low quality image inputs.
- Brought the program into WXML group research.

Optimization Donation Pickup Routes for University District Food Bank — *A mathematics modeling project: May 2016 - Jun. 2016*

- Led a group of 3 to work with the community partner to optimize pick-up routes to increase efficiency of time and cost while accomplishing required goals under complex restrictions.
- Collected and analyzed data from the food bank staffs and adapted mathematical concepts to

model the problem.

- Implemented a Python program to simulate real-world environment and applied algorithms to efficiently identify routes.
- Validated the outputs and fine-tuned the program and model to obtain better results.

Various Projects of Data Analysis — *Course projects: Jan. 2016 - Mar. 2016*

- Explored and implemented scientific data processing techniques such as Discrete Fourier Transform and Singular Value Decomposition.
- Explored methods of machine learning to classify music genres and bands.
- Authored a paper-style report for each sub-project.