Tianchi (Maverick) Mo

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EDUCATION

Stony Brook University Stony Brook, NY
Ph.D. Candidate in Computer Science | GPA: 4.0 Expected December 2024
Relevant Courses: Data Science Fundamentals, Analysis of Algorithms, Machine Learning, Theory of Database Systems, and Computational Geometry.

Central South University Changsha, China
Master of Engineering in Software Engineering | GPA:3.9 June 2017

Central South University Changsha, China
Bachelor of Engineering in Software Engineering | GPA:91/100 June 2014

SKILLS

Programming Language: Python, Java, C/C++, MATLAB, SQL.
Computer Science: Algorithms, data structures, Linux, and basic machine learning tools (PyTorch and XGBoost).

WORKING EXPERIENCE

TATA | Forage Simulation Virtual
Participant September 2023
- Completed a 7-hour work simulation for Data Visualisation: Empowering Business with Effective Insights.
- Utilized PowerBI to analyze and visualize the relation between the revenue data and time/geographic data.

Department of Computer Science | Stony Brook University Stony Brook, NY
Teaching Assistant January 2023 - Present
Teaching Assistant August 2018 - December 2019
- Assisted in teaching 3 undergraduate courses and 1 graduate course in the areas of programming language and algorithms.
- Created automatic graders in Python & Java to grade students' programming assignments.
- Designed assignments and exams to improve students' ability to solve problems and inspire their creativity.
- Offered office time (3 hours per week) to help students with questions and deepen their understanding of the course content.

Department of Computer Science | Stony Brook University Stony Brook, NY
Research Assistant August 2019 - December 2022
- Collaborated with Professor Michael A. Bender, 4 labmates, and other collaborators worldwide on various projects on adaptive data structures, paging algorithms, and machine-learning-advised algorithms. Please refer to the PROJECTS section for more information.

School of Economy & Management | Changsha University of Science & Technology Changsha, China
Website Developer/Team Leader August 2012 - May 2013
- Led a team of 7 students in developing 2 websites for the School of Economy & Management of Changsha University of Science & Technology.
- Utilized Java, Javascript, Microsoft SQL Server, and Apache to build the websites. Wrote ~30K lines of code.
- Communicated with the clients weekly to collect the requirements and keep the clients updated on the progress.

PROJECTS

Machine-learning-advised/Heuristic Paging Algorithm (research project) January 2022 - Present

- Designed algorithms to apply the machine learning techniques to the parallel paging and the green paging. The goal of green paging is to reduce the computer's energy consumption.
- Designed and performed an initial experiment to test the machine-learning-advised algorithm with XGBoost.
- Created a dynamic programming algorithm to find the offline optimal solution for green paging.
- Collected and analyzed the performance data from a Linux server running CPU- and RAM-intensive programs in parallel.

Adaptive Filter: Analysis and Implementation (research project) September 2020 - Present

- Established mathematical bounds to quantify the performance of 3 kinds of adaptive filters: broom filter, telescoping adaptive filter, and cache-augmented filter (filter is a kind of approximate dictionary data structure).
- Implemented the broom filter and the cache-augmented filter with C++ independently. The implementation of the broom filter is the first after it was proposed in theory.
- Compared 5 kinds of adaptive filters experimentally.
- Published a 9-page paper in the 2021 Symposium on Algorithmic Principles of Computer Systems (APOCS). Currently working on a journal version of this paper.

Generating Anime Faces with Generative Adversarial Networks (course project) November - December 2019

- Implemented DCGAN and W-GAN with PyTorch to generate anime faces.
- Explored parameter tuning of deep neural networks.
- Deployed a Progressive Growing GAN (PGGAN) offered by the official website on Amazon Web Services to generate anime faces with better quality.
- Received A in the project estimation.

Analyzing the Pop Songs Lifespan (course project) November - December 2018

- Collected data of 25325 songs from different sources, including Billboard, Spotify, and Million Songs Set, for analysis.
- Applied linear regression and LightGBM to analyze what properties (e.g., singers, awards, themes and genres) could make music's popularity endure.
- Drew various plots (e.g., histogram, line chart, and tag cloud) with Matplotlib and Seaborn to visualize our results.
- Received A in the project estimation.

PUBLICATIONS

- Michael A. Bender, Rathish Das, Martin Farach-Colton, **Tianchi Mo**, David Tench, Yung Ping Wang. Mitigating False Positives in Filters: to Adapt or to Cache?. Symposium on Algorithmic Principles of Computer Systems (APOCS). 2021. (This is a theoretical paper. Authors were sorted alphabetically. I am the corresponding author and presenter. See my presentation here.)
- Hongxiao Fei, **Tianchi Mo**, Yang Wang, Zequan Wu, Yihuan Liu. The Searching Ranking Model Based on the Sharing and Recommending Mechanism of Social Network. Advances in Services Computing: 9th Asia-Pacific Services Computing Conference (APSCC). 2015. (The first author is my advisor. I am the second but primary author. It was traditional in China to let the advisor be the first author.)
- **Tianchi Mo**, Hongxiao Fei, Li Kuang, Qifei Qin. Identifying Users' Interest Similarity Based on Clustering Hot Vertices in Social Networks. 8th Asia-Pacific Services Computing Conference (APSCC). 2014.