

# Tianchi (Maverick) Mo

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## EDUCATION

### **Stony Brook University**

*Ph.D. in Computer Science* | GPA: 4.0

Stony Brook, NY

December 2024 or June 2025

**Relevant Courses:** Data Science Fundamentals, Analysis of Algorithms, Machine Learning, Theory of Database Systems, and Computational Geometry.

### **Central South University**

*Master of Engineering in Software Engineering* | GPA: 3.9

Changsha, China

June 2017

### **Central South University**

*Bachelor of Engineering in Software Engineering* | GPA: 91/100

Changsha, China

June 2014

## SKILLS

**Programming Language:** Python, Java, C, C++, MATLAB, SQL, Shell, OCaml.

**Computer Science:** Pure and Applied Algorithms, Data Structures, Cache and Storage Systems, Database Systems, Linux, and Machine Learning (e.g., PyTorch and XGBoost).

## WORKING EXPERIENCE

### **Department of Computer Science | Stony Brook University**

*Graduate Assistant*

Stony Brook, NY

January 2024 - Present

*Research Assistant*

January 2020 - December 2022

- Collaborating with Professor Michael A. Bender, lab mates, and other collaborators worldwide on various projects on adaptive data structures, cache and paging algorithms, and machine-learning-advised algorithms. Please refer to the PROJECTS section for more information.

### **Department of Computer Science | Stony Brook University**

*Teaching Assistant*

Stony Brook, NY

January 2023 - December 2023

*Teaching Assistant*

August 2018 - December 2019

- Assisted in teaching undergraduate-level courses (Analysis of Algorithms, Programming Abstractions, and Foundations of Computer Science (Honors)) and a graduate course (Analysis of Algorithms).
- Designed assignments and exams to improve students' ability to solve problems and inspire their creativity.
- Created automatic graders in Python & Java to grade students' programming assignments.
- Offered office time (3 hours per week) to help students with questions and deepen their understanding of the course content.

### **Tata Consultancy Services | Forage Simulation**

*Data Analyst*

Online

September 2023

- Completed a work simulation involving creating data visualizations for [Tata Consultancy Services](#).
- Prepared questions for a meeting with client senior leadership (e.g., CEO and CMO) to make sure they could get valuable information from the data visualization from different angles.
- Created visuals for revenue/geographic/website log data analysis with Microsoft PowerBI to help executives make effective decisions.

## School of Economy & Management | Changsha Univ of Sci & Tech

Website Developer/Team Leader

Changsha, China

August 2012 - May 2013

- Led a team of 7 students in developing 2 management websites for the School of Economy & Management of Changsha University of Science & Technology.
- Utilized Java, Microsoft SQL Server, and Apache Struts 2 + Spring + Hibernate to build the websites. Designed the database from scratch. Wrote ~30K lines of code.
- Communicated with the clients weekly to collect the requirements and keep the clients updated.

## PROJECTS

### Machine-learning-advised/Heuristic Paging Algorithm (research project)

January 2022 - Present

- Designed algorithms to apply machine learning techniques to parallel paging and green paging. (Green paging aims to reduce the computer's energy consumption.)
- Created and implemented a dynamic programming algorithm to find the offline optimal solution for green paging, which could be used in training machine learning models for memory allocation.
- Designed and performed an initial experiment to test the algorithms with XGBoost's advice.
- Collected and analyzed the performance data from a Linux server running CPU- and RAM-intensive programs in parallel with Python and Shell scripts.

### 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 an approximate dictionary data structure widely used to block negative queries, i.e., queries whose keys are not existent in the system.)
- Implemented the broom filter and the cache-augmented filter with C++. 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 GANs (course project)

November 2019 - December 2019

- Implemented DC-GAN and W-GAN with PyTorch to generate anime faces.
- Explored parameter tuning of deep neural networks.
- Deployed a Progressive Growing GAN (PG-GAN) on Amazon Web Services (AWS) to generate better-quality anime faces.

### Analyzing the Pop Songs Lifespan (course project)

November 2018 - December 2018

- Collected data of 25,325 songs from different sources, including Billboard and Spotify, for analysis.
- Performed feature engineering and applied LightGBM to analyze what properties (e.g., singers, awards, themes, and genres) could make music's popularity endure.
- Applied Python tools, e.g., Pandas, JSON, Matplotlib, and Seaborn, to analyze and visualize our results.

## 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. 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. 2014.