Jialin Cui

801 Seahawk Circle, Raleigh, NC 27603

619-793-9152 | jcui9@ncsu.edu | linkedin.com/in/cui-jialin | github.com/JialinC | scholar.google.com/Jialin Cui

Education

North Carolina State University **Sep. 2019 – May 2025**

Ph.D. in Computer Science | ***GPA: 4.125/4.0*** *Raleigh, NC*

San Diego State University **Sep. 2014 – May 2019**

BS in Computer Science with Minors in Mathematics and Chemistry | ***GPA: 3.98/4.0*** *San Diego, CA*

Relevant Coursework

- Data Structures
- Algorithm Analysis
- Operating Systems
- Compiler Construction
- Computer Architecture
- Database Management
- Computer Networks
- Network Security
- Software Security
- Software Engineering
- DevOps
- Cloud Computing
- Object-Oriented Design
- Machine Learning

Technical Skills

Languages: Python, Java, Ruby, C, C++, HTML/CSS, JavaScript, R, SQL
Developer Tools: VS Code, Eclipse, AWS, Kubernetes, VirtualBox, Docker, Ansible
Technologies/Frameworks: Linux, Jenkins, GitHub, GitLab, JUnit, Flask, Spring, Ruby on Rails, Node.js, React

Experience

North Carolina State University (NCSU) **May 2019 – May 2025**

Research Assistant | Teaching Assistant *Raleigh, NC*

- Designed and developed a software application to collect GitHub metrics for users and implemented an algorithm to form software development teams based on mined data.
- Published eight first-author papers in various conferences.

San Diego State University (SDSU) **May 2017 – May 2019**

Mathematics Research Assistant *San Diego, CA*

- Developed kernel PCA-based methods in Python to analyze high-dimensional numerical solutions of the Lorenz system.
- Published one first-author paper in the journal Chaos, Solitons & Fractals.

Projects

XV6 | *C, QEMU, Assembly* **August 2020**

- Implemented a page allocator within the xv6 kernel, along with lazy page allocation and Copy-On-Write (COW) for the fork system call. Implemented Unix-like mmap and munmap system calls to enhance memory management.
- Developed user-level threading capabilities and integrated interrupt handling mechanisms. Incorporated a lottery-based scheduling algorithm for process management, optimizing task execution. Implemented virtual memory management to expand xv6's memory handling capabilities. Introduced kernel threads with support for clone, join, thread_create, lock_acquire, and lock_release system calls, enhancing concurrency and synchronization.
- Redesigned locking strategies to minimize contention and improve system efficiency. Extended the xv6 file system to support large files and symbolic links. Added a device driver for a Network Interface Card (NIC) and integrated UDP network socket support.

Expertiza | *Ruby, Ruby on Rails* **April 2021 – Present**

- Implemented OAuth authentication, enabling GitHub login and repository statistics visualization.
- Integrated the I18n gem to support multiple languages.
- Refactored the frontend with React and TypeScript.

GitHub-Mole | *Python, Flask, React, MySQL, GraphQL, Gunicorn, Nginx* **August 2022 – Present**

- Find a deployed version here, a short intro video here, and on GitHub.
- Designed and implemented the full-stack architecture, including the frontend, backend, and database schema.
- Developed Flask-based backend APIs for mining GitHub contribution data.
- Designed and implemented object-oriented GraphQL queries to support mining GitHub data.
- Implemented algorithms for forming software development teams based on collected GitHub data.
- Created interactive UI graph components for data analysis.
- Uses MySQL for data persistence and provides users with Docker Compose for local development.
- Used in North Carolina State University's graduate-level software engineering course for team formation. The platform has supported eight published research papers.

SELECTED PUBLICATIONS

- **J. Cui** et al, "A Statistical Study of Female Students in a Software Engineering Class: Preparedness, Performance, and Contribution," Frontiers in Education 2024 (FIE 2024)
- **J. Cui** et al, "How Much Effort Do You Need to Expend on a Technical Interview? A Study of LeetCode Problem Solving Statistics," Conference on Software Engineering Education and Training (CSEE&T 2024) **Received Best Paper award**
- **J. Cui** et al, "A Comparative Analysis of GitHub Contributions Before and After An OSS Based Software Engineering Class,"Innovation and Technology in Computer Science Education (ITiCSE 2024)
- **J. Cui** et al, "Utilizing the Constrained K-Means Algorithm and Pre-Class GitHub Contribution Statistics for Forming Student Teams," Innovation and Technology in Computer Science Education (ITiCSE 2024)
- **J. Cui** et al, "How Pre-class Programming Experience Influences Students' Contribution to Their Team Project: A Statistical Study," March 2024, Technical Symposium on Computer Science Education (SIGCSE 2024)
- **J. Cui** et al, "Predicting Students' Software Engineering Class Performance with Machine Learning and Pre-Class GitHub Metrics," January 2024, IEEE Frontiers in Education Conference (FIE 2023)
- **J. Cui** et al, "Correlating students' class performance based on github metrics: A statistical study," June 2023, Innovation and Technology in Computer Science Education (ITiCSE 2023)
- **J. Cui** et al, "Can pre-class github contributions predict success by student teams?", May 2022, International Conference on Software Engineering (ICSE-SEET 2021)
- **J. Cui** et al, "A kernel principal component analysis of coexisting attractors within a generalized Lorenz model", May 2021, Chaos, Solitons & Fractals Journal