Lixing Wang

+1 401-390-1215 | lixing_wang@brown.edu | lixing-w.github.io
69 Brown St, Box 5307 | Providence, RI 02912

Objective

Passionate about computer science and algorithms with a solid foundation in mathematics. Experienced in both OOP and Functional programming, such as Java, Python, C++ and ReasonML. Seeking opportunities to further develop expertise in algorithms and programming through tackling real-life challenges.

Education

- **Brown University** *Sep 2023 - May 2027*
  Sc. B. Mathematics - Computer Science and A. B. Music Providence, RI
  - GPA: 4.00/4.00
  - Relevant Courses: Graph Theory, Abstract Algebra, Math Analysis: Functions of One Variable, Multivariable Calculus w/ Theory, Linear Algebra w/ Theory, Statistical Inference I, Program Design w/ Data Structures and Algorithms, Intro to Computer Systems, Computer Sci: An Integrated Intro

Skills & Interests

- **Programming Languages: C/C++, Java, Python, ReasonML, MySQL**
- **Technologies: Vim, GDB, VS Code, IntelliJ, CLion**
- **Languages:** English (Proficient), Chinese (Native), Japanese (Beginner)
- **Interests:** Music-making, Anime, Cycling

Projects

- **Graph Coloring Problem** *Tools: Java, Latex* [demo][paper] *March 2024*
  - Developed a Java program to find all possible simple graphs on n vertices with upto k colors, upto isomorphism, when n and k are small, using bitwise encoding, matrices and hash tables
  - Developed recursive algorithms with rigorous math proofs to solve the problem on complete graphs and paths, which can be applied to large n and k
  - Designed methods to automatically generate latex code for graphs for visualization
- **Connect 4 Game** *Tools: ReasonML, C++* [demo] *July 2024*
  - Cooperated with a partner to develop the Connect 4 terminal game with ReasonML (functional programming)
  - In collaboration, designed a competitive game-play AI using tree search algorithm (alpha-beta pruning) and recursion.
  - Independently proposed and implemented pattern-detection using convolution
  - Independently rewrote the project using C++, optimized convolution algorithm by using addition rather than multiplication, and achieved $\sim$ 2000x performance boost
  - Incorporated a player-friendly user-interface built by ANSI escape codes
- **Shell** *Tools: C* [demo] *Oct 2024*
  - Built a fully functional shell supporting a series of built-in commands and running foreground and multiple background jobs
  - Token-by-token command line parsing and full support for input-output redirection
  - Handling of common signals and extensive uses of system calls such as waitpid, fork, execv, tcsetpgrp, and setpgid
  - Careful job management and process reaping, support for fg and bg command, and easy-to-read shell message

Leadership Experience

- **E-board Member** *Brown Organization of Producers and Songwriters* *Sep 2024 - Present*
  - Collaborating with board members and scheduling for club activities
  - Building a community through Discord channel and bi-weekly meetups where club members share their original works, insights into music production, and discuss cutting-edge music technologies
  - Utilizing extracurricular time, hosting meeting, sharing music knowledge, and helping others unleash their creativity
- **Project Manager** *WFLA Channel* *Sep 2021 - Jun 2022*
  - In charge of editing interview series with top students in the high school, and shared practical insights into filming and editing
  - In collaboration of the club leader, designed a new logo with animations that was officially adopted

Honors and Awards

- **Finalist,** *International Mathematical Modeling Challenge* *2022*
- **Global Silver Award,** *British Physics Olympiad Round 2* *2022*
- **Top Gold,** *British Physics Olympiad Round 1* *2021*
- **Distinction (Top 5%),** *American Mathematics Competition 12* *2021*