

# Junlin Chen

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## EDUCATION

### Beihang University

Beijing, China

*Bachelor of Computer Science*

*Expected Sept. 2025*

- GPA: 3.71/4
- Arithmetic Mean: 89.57/100
- Second Class Innovation and Entrepreneurship Scholarship, 2022-2023
- Second Class Outstanding Social Work Scholarship, 2022-2023
- Outstanding Student Cadre, 2022-2023

## RESEARCH PUBLICATIONS

**Junlin Chen**, Chaojing Liu, Zhongzhi Luan, Ming Gong, Qingfeng Li, Depei Qian, "Large-Scale Parallelization and Optimization of Lattice QCD on Tianhe New Generation Supercomputer", The 25th IEEE High Performance Computing and Communications (HPCC 2023), Dec. 13-15, 2023, Melbourne, Australia.

## EXPERIENCE

### Intern

Sept. 2022 – Present

*Sino-German Joint Software Institute, Beihang University*

*Beijing, China*

- Mastered the ability to leverage the hardware architecture of the Tianhe new generation supercomputer to accelerate computations.
- Participated in paper writing, honing my abilities in organizing paper structures, writing academic papers, and creating research graphics.
- Have read papers and codes on topics such as graph computing, GNN engine acceleration, and parallel computation.

## PROJECTS

**Accelerated graph processing on Large Graphs(In Progress)** | *C++, CUDA, OpenMp* Feb. 2024 – Present

- Learned the source code of View-Based GPU-Accelerated Subgraph Matching on Large Graphs.
- Tried to use Tianhe new generation supercomputer to speed up kmeans algorithm.

**CS224W Colab(Finished 0,1)** | *NetworkX, Pytorch*

Jan. 2024 – Present

- Studied the basic utilization of NetworkX and Pytorch.
- Finished a learning algorithm on graphs using Pytorch: a node embedding model.

**CME 213 Module(Finished 1,2,3)** | *OpenMp, MPI, Cuda*

Oct. 2023 – Present

- Studied the basic utilization of OpenMP, MPI, and CUDA.

**Online Flea Market Platform** | *Python, Flask*

Sept. 2023 – Dec. 2023

- Utilized the Flask framework to complete the backend code for user center and flea market functionalities.
- Integrated the backend with databases using GaussDB for MYSQL and MYSQL.

**SysY-to-LLVM Compiler Project** | *C++*

Sept. 2023 – Dec. 2023

- Developed a compiler that translates SysY language into LLVM language, encompassing lexical analysis, syntax analysis, semantic analysis, LLVM intermediate code generation, and error handling.

#### **Parallelization and Optimization of Lattice QCD on Supercomputer** | *C++* Dec. 2022 – Dec. 2023

- Studied the implementation of Global Shared Memory and Array Memory to enhance communication between two computational processes.
- Studied the utilization of accelerating vectorized calculations through the implementation of the MT-3000 processor's Acceleration Array.
- Conducted performance analysis on global reductions, identifying bottlenecks and proposing adaptive strategies to optimize reduction frequency.

#### **Object-Oriented Programming Project Collection** | *Java, JML, UML* Feb. 2023 – Jun. 2023

- Implemented expression handling incorporating power functions, trigonometric functions, and derivative operators using recursive descent parsing.
- Developed a multi-threaded real-time elevator simulation system utilizing thread pools and a local greedy approach to handle the addition of elevators and maintenance requests.
- Mastered the utilization of JML specifications to enhance code quality and proficient in creating UML diagrams.

#### **MIPS Pipeline Processor with Exception Handling Support** | *Verilog* Sept. 2022 – Dec. 2022

- Implemented a MIPS five-stage pipeline CPU that supports branch prediction and hazard handling.
- External instruction memory and data memory are implemented, and CP0, Bridge, and Timer are introduced to support interrupt and exception handling.

## SKILLS

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**Language Proficiency:** English, Mandarin Chinese, Cantonese

**Programming Languages:** C++, Python, Java, Verilog, LLVM IR, MIPS Assembly Language, Latex

**Application Programming Interfaces Skills:** OpenMp, MPI, CUDA

**Relevant Courses:** Parallel Programming, Principle of Distributed System, Object-oriented Design and Construction