Cao Chen

19946235071 | 18110290001@fudan.edu.cn
Shanghai

EDUCATION

Fudan University - Fluid mechanics (four sci papers have been published) Doctor — Sep 2018 - Jun 2023

Sun Yat-sen University - Theoretical and Applied Mechanics (GPA:3.7 / 4.0) Bachelor — Aug 2014 - Jun 2018

Technology stack

- **Programming language:** C++ Python Shell Matlab
- **Frames:** Understand commonly used machine learning frameworks Tensorflow Pytorch Scikit-Learn Scikit-opt
- **Compilers and Parallel Computing:** SYCL LLVM-LIT

LEADERSHIP EXPERIENCE

Huawei - C++ engineer 2012 laboratory — Jun 2022 - Present

Participate in the development and debugging of Huawei C++ compiler, and write heterogeneous computing test operators based on SYCL.

Participate in the automatic vectorization development from MLIR to SYCL, rewrite the Filecheck in the Testcase, and realize IR-level check.

Participate in MLIR vectorization testing and write automatic test scripts based on Lit tools and Shell scripts.

Using the GDB tool to detect the source of problems in vectorization failure cases and fix related problems.

PROJECT EXPERIENCE

Research on Automatic Vectorization Technology Based on SYCL - Developer — Jun 2022 - Jul 2022

Project introduction: The automatic vectorization function is implemented in the SYCL heterogeneous programming, and the function of converting scalar computing into vector computing in heterogeneous computing is realized, which reduces the use of loops in programs and improves the calculation efficiency.

Personal Responsibility: Using llvm-lit check the automatic vectorization IR-result from MLIR to SYCL.

Rewrite the Filecheck content in the Testcase and complete the automated test in combination with shell scripts.

Based on SYCL, the heterogeneous study is written and the vectorization calculation function is tested.

A study of layer flow prediction based on machine learning - Designers — Jun 2019 - Present

Project introduction: The process of converting natural laminar flow into turbulence is called transition. Based on heterogeneous computing software, Turbostream is used to accelerate the solution and calculation of N-S equation, and the position of transition is predicted through the calculation results.

Personal responsibility: solve NS equation based on Turbostream, and calculate laminar flow positions and lengths of various configurations in batch.

Based on the training of a large number of samples through neural networks, the position of transition is predicted.

The results have achieved the current domestic leading cross-component and large-grid computing technology.

Published SCI paper "A nacelle inlet design approach with more three-dimensional geometric consideration"

HONORS & AWARDS

National scholarship winner	2014-15
Tencent Gamejam second place in the game development competition (only focus on learning Lua programming for one day)	2021
Samsung Scholarship	2015-16
Provincial second prize in the national college student mathematical modeling competition	2015
Provincial second prize in the national college student mathematical modeling competition	2016