Huiyu Xie

CONTACT INFORMATION

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EDUCATION

Santa Clara University, Santa Clara, CA
M.S. in Computer Science and Engineering — September 2022 - May 2024

Chinese University of Hong Kong, Shenzhen, Shenzhen, China
B.S. in Statistics — September 2018 - May 2022

RESEARCH EXPERIENCE

GPU Accelerated Mixed-Precision Implicit Discontinuous Galerkin Wave Solver [Code]
May 2025 - Present

Integrate an adaptive mixed-precision and dynamically scaled preconditioned conjugate gradient algorithm with explicit first-stage singly diagonally implicit Runge-Kutta methods (ESDIRK) to develop an efficient GPU-based wave solver, achieving both high-precision results and high performance on GPU. (In progress)

Advisor: Prof. Tim Warburton

GPU Acceleration for Hyperbolic PDE Semidiscretizations in Trixi.jl using CUDA.jl [Code]
May 2023 - Present

Provide GPU support for Trixi.jl (a high-order numerical simulation framework for hyperbolic PDEs) to accelerate the semidiscretization of solvers using CUDA.jl, focusing on Discontinuous Galerkin collocation spectral element methods (DGSEM) on tree-based mesh structures.

Advisors: Prof. Hendrik Ranocha, Prof. Jesse Chan, Prof. Michael Schlottke-Lakemper

OPEN SOURCE EXPERIENCE

Trixi-GPU (TrixiCUDA.jl): Lead Developer [GitHub]
Trixi-Framework (Trixi.jl): Active Maintainer [GitHub]
JuliaGPU (CUDA.jl, GPUCompiler.jl, NVTX.jl): Active Contributor [GitHub]
SciML (SimpleNonlinearSolve.jl, RecursiveArrayTools.jl, OrdinaryDiffEq.jl): Contributor [GitHub]
NVIDIA-RAPIDS (cuGraph): Contributor [GitHub]
libparanumal: Developer (Project Fork) [GitHub]

WORK EXPERIENCE

Bank of Hawai'i, Honolulu, HI

Strategic Analyst — May 2024 - August 2024

Cleaned raw customer transaction and profile data, trained and tuned classification models, including logistic regression, decision tree, and XGBoost, to predict the customer group with a high probability of transferring accounts from checking-only to savings.

Google Summer of Code, Santa Clara, CA

Open Source Developer — May 2023 - August 2023

Accelerated PDE semidiscretizations in Trixi.jl by developing and optimizing GPU kernels and data transfers using CUDA.jl, expanding GPU support to advanced methods and architectures, and delivering high-performance PDE solvers.

Shenzhen Research Institute of Big Data, Shenzhen, China

Data Analyst — June 2020 - May 2022

Applied Shannon Entropy, Approximate Entropy, Sample Entropy, and a Lempel-Ziv-based En-

tropy Estimator to student trajectory data, improving the correlation with academic performance and creating entropy-based features for predicting student outcomes.

CONFERENCE TALK	**Julia Conference 2025**, Pittsburgh, PA TrixiCUDA.jl: CUDA Support for Solving Hyperbolic PDEs on GPU [Web]	July 2025
AWARDS	**CUHK Shenzhen School of Data Science Dean's List**	September 2020
	Mathematical Contest in Modeling S Prize	May 2019

PROGRAMMING SKILLS

- **Programming Languages:** C++/Julia/Python (Proficient); MATLAB/C/C#/SQL/R (Familiar)
- **Cloud Computing:** AWS, GCP
- **Distributed/Parallel:** CUDA/Open MPI/OpenMP/Spark