Yu-Shiang Lin

Software Engineer, Software Developer, Research Engineer

https://coldfunction.github.io/

Education

- National Tsing Hua University
  - Ph.D in Department of Computer Science (Jul. 2012 – Jan. 2018)
    - Doctoral Dissertation: A New API Remoting Policy for General-Purpose Computing on GPU Virtualization and its Application on Biological Tools
- Chang Guang University
  - Master in Computer Science & Information Engineering (Aug. 2010 – July. 2012)
    - Masters Dissertation: Efficient Constrained Multiple Sequence Alignment Tool and Parallel RSA Decryption Algorithm for Many-core GPUs with CUDA

Work Experience

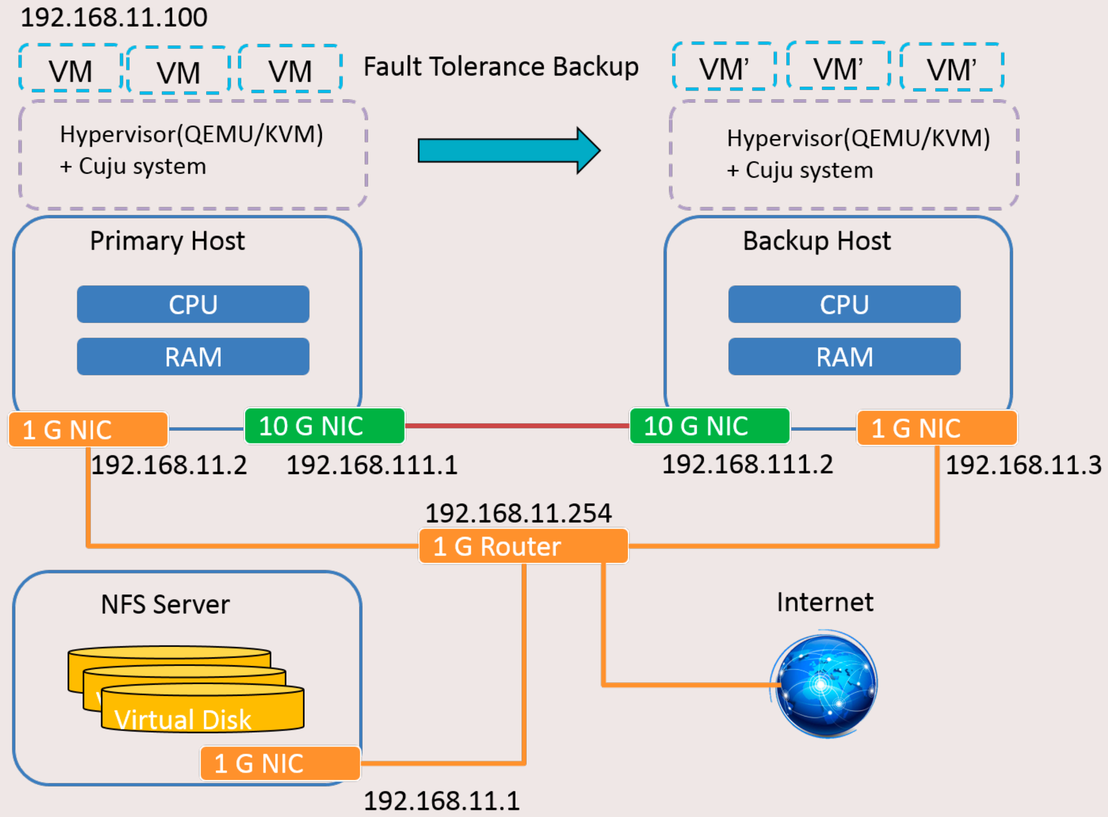
Oct 2018 - Mar 2021 (3 years)

- Industrial Technology Research Institute
  - Research and Development Engineer
    - Virtualization-based fault tolerance
    - Cuju Project
    - Patents: FAULT-TOLERANT SYSTEM AND CONTROL METHOD THEREOF, P52080043TW, P52080043US & P52080043CN
    - Paper: 3 international conferences
    - Outstanding Research Award, Industrial Technology Research Institute, 2020

Cuju

Oct 2018 - Mar 2021 (3 years)

- Cuju: An open source project for Virtualization-Based Fault Tolerance
- Latency Bounding
- Group Fault Tolerance
- https://github.com/Cuju-ft/Cuju



$< 10\,ms$

Reduce the fault tolerance latency to less than 10 milliseconds

$> 90\,\%$

90% or more epochs can be bounded on 2% error for 10 milliseconds latency

-88%

Group FT can reduce 88% system latency of the Individual FT

Work Experience

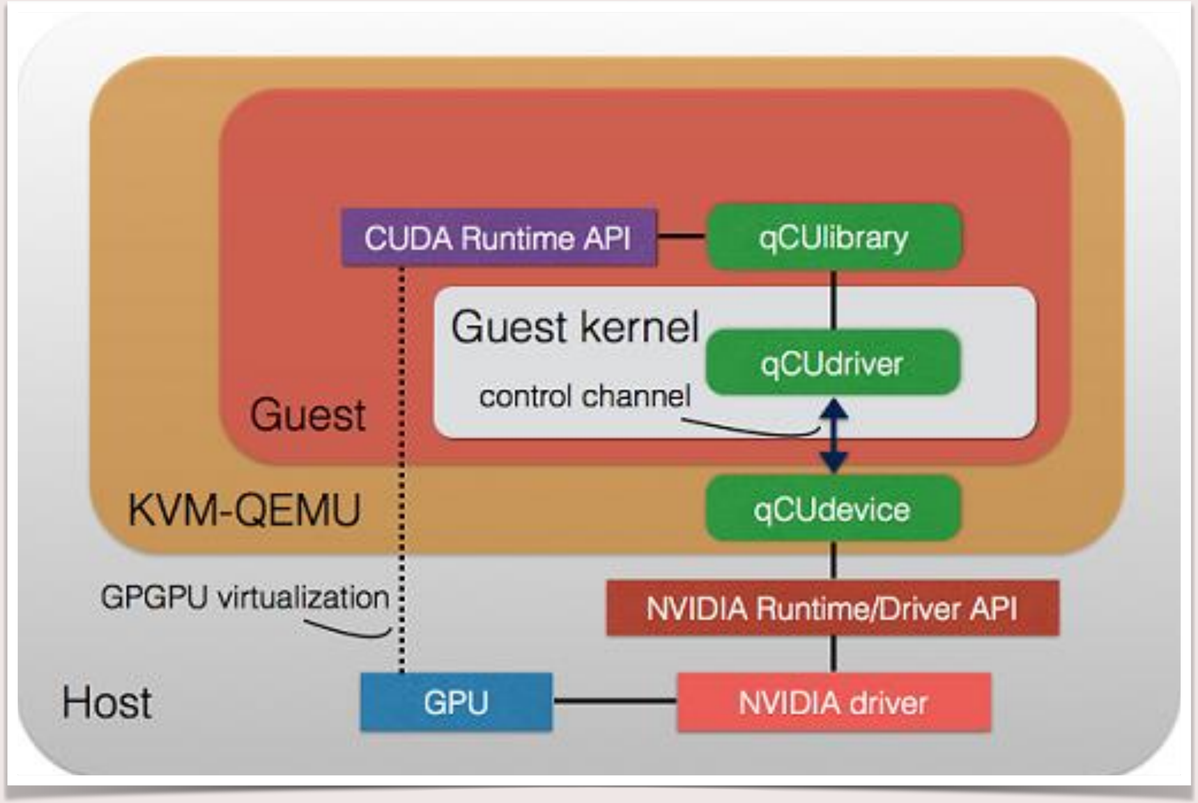
2010 - 2018 (8 years)

- Lecturer (2010 - 2018)
  - Parallel, GPU and Virtualization Technique: Design and teaching related courses for the industry and academic.
- Tsinghua University (Summer in 2013 & 2015)
  - Parallel Programming course: Design the course and teach students to implement the parallel computing algorithm by pthread, MPI and CUDA for solving the practical problem.

qCUDA

Oct 2016 - Dec. 2017

- qCUDA - A framework of GPGPU virtualization
- NTHU System Software Lab
- https://github.com/coldfunction/qCUDA
- Doctoral Dissertation: A New API Remoting Policy for General-Purpose Computing on GPU Virtualization and its Application on Biological Tools



CUDA-clustalW & GPU-REMusic Tool

2010 - 2012

CUDA-clustalW https://github.com/coldfunction/CUDA-clustalW

downloads | Documents |

In computational biology, sequence alignment is of priority concern and many methods have been developed to solve sequence alignment-related problems for biological applicatons. ClustalW is a progressive multiple sequence alignment tool to align a set of sequences by repeatedly aligning pairs of sequences and previously generated alignments. Several algorithms or tools have been ported on GPUs with CUDA in computational biology, such as MUMmerGPU, CU
of ClustalW v2.0.9 processing pipeline by using inter-task parallelization. CUDA ClustalW v1
Synchronous Diagonal Multiple Threads type. Several optimization methods were designed
v1.0 can achieve about 22x speedups for 1000 sequences with length of 1532 in the distanc
the CUDA ClustalW v1.0 can achieve about 33x speedups by comparing to ClustalW v2.0.1

Downloads and version history

Some descriptions here:

Version 1.0.0 (March 2013) **download** (2.6 MB)

- Linux x86 64-bit
- CPU/GPU coprocess
- Support Multiple GPUs
- NVIDIA CUDA support
- Base on clustalW 2.0

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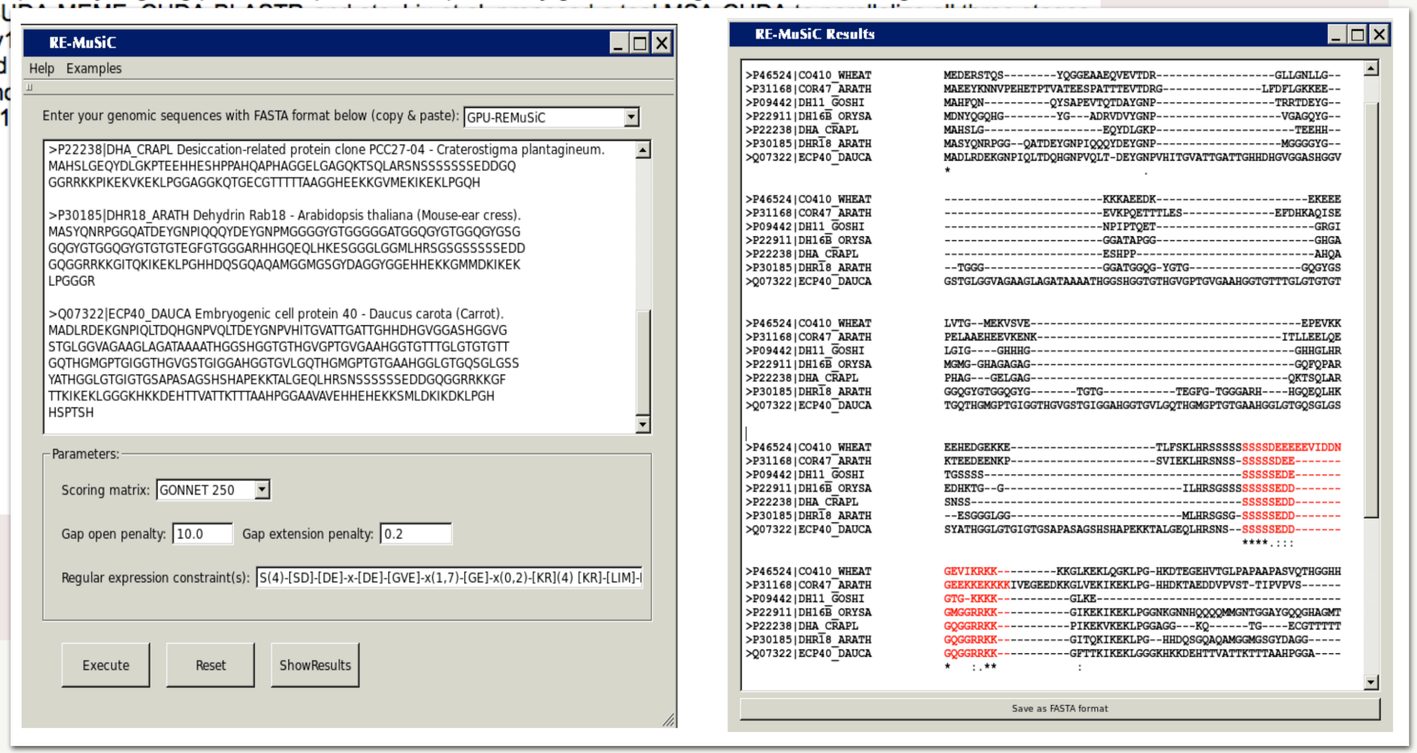


Other Projects

2011 - 2014

- 3LAllocator
  - A Non-Blocking Approach on GPU Dynamical Memory Management
- GOOS-SM
  - GPU-Oriented Operations Server for Sparse Matrix
- CrackRSA
  - An efficient parallel RSA decryption algorithm for many-core GPUs with CUDA
- CUDA programming competition 2012 & 2011: The Second Place Award and Honorable Mention in the CUDA programming competition 2012 & 2011 in Taiwan

Publish

https://coldfunction.github.io/2021/01/06/Publish/

Conference

- Chieh-Yu Yu, Che-Rung Lee, Po-Jui Tsao, Yu-Shiang Lin, Tzi-Cker Chiueh, “Efficient Group Fault Tolerance for Multi-tier Services in Cloud Environments”, ICC, 2020.
- Yu-Shiang Lin, Chun-Yuan Lin, Che-Rung Lee, Yeh-Ching Chung, “qCUDA: GPGPU Virtualization for High Bandwidth Efficiency ”, CloudCom, 2019.
- Ming-Ting Wei, Yu-Shiang Lin, Che-Rung Lee, “Performance Optimization for InfiniBand Virtualization on QEMU/KVM”, CloudCom, 2019.
- Chun-Yuan Lin, Chung-Hung Wang, Che-Lun Hung, Yu-Shiang Lin, “Efficient parallel algorithm for compound comparisons on multi-GPUs”, IEEE -BIBM, 2014.
- Yu-Shiang Lin, Chun-Yuan Lin, Jon-Yu Lee, “A New Non-Blocking Approach on GPU Dynamical Memory Management”, IWCSE, 2013.
- Yu-Shiang Lin, Chun-Yuan Lin, Yeh-Ching Chung, “GPU-Based Cloud Service for Multiple Sequence Alignments with Regular Expression Constrains”, CloudCom, 2012.
- Yu-Shiang Lin, Chun-Yuan Lin, Der-Chyuan Lou, “Efficient Parallel RSA Decryption Algorithm for Many-core GPUs with CUDA”, ICTSM2012.
- Yu-Rong Chen, Che Lun Hung, Yu-Shiang Lin, Chun-Yuan Lin, Tien-Lin Lee, Kual-Zheng Lee, “Parallel UPGMA Algorithm on Graphics Processing Units Using CUDA”, FGC2012.
- Chun-Yuan Lin, Yu-Shiang Lin, Jiayi Zhou, and Chuan Yi Tang, “GPU-REMuSiC: Efficient Contrained Multiple Sequence Alignment Algorithm on Graphics Processing Units”, CTHPC, 2011.
- Yu-Shiang Lin, Chun-Yuan Lin, Sheng-Ta Li, Joy Lee, and Chuan Yi ang, “GPU-REMuSiC: the implementation of Constrain Multiple Sequence Alignment on Graphics Processing Units”, NVIDIA GPU Computing Seminar, 2010.

Journal

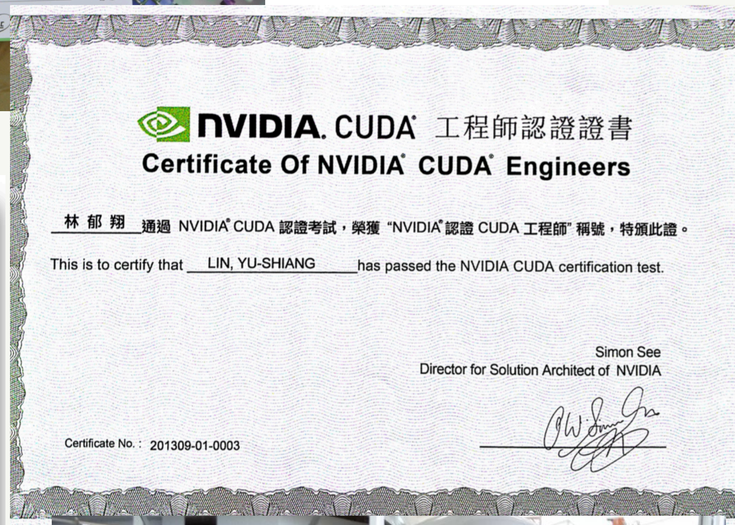
- Che-Lun Hung, Yu-Shiang Lin, Chun-Yuan Lin, Yeh-Ching Chung, Yi-Fang Chung, “CUDA ClustalW: An efficient parallel algorithm for progressive multiple sequence alignment on Multi-GPUs”, CBAC(2015).
- Chun-Yuan Lin, Chung-Hung Wang, Che-Lun Hung, and Yu-Shiang Lin, “Accelerating Multiple Compound Comparison Using LINGO-Based Load-Balancing Strategies on Multi-GPUs”, IJG (2015).
- Yu-Shiang Lin, Chun-Yuan Lin, Che-Lun Hung, Yeh-Ching Chung and Kual-Zheng Lee: GPU-UPGMA: high-performance computing for UPGMA algorithm based on graphics processing units.CCPE(2014).
- Chun-Yuan Lin, Yu-Shiang Lin: Efficient parallel algorithm for multiple sequence alignments with regular expression constraints on graphics processing units. IJCSE 9(1/2): 11-20 (2014).
- Yu-Shiang Lin, Chun-Yuan Lin, Hsiao-Chieh Chi, Yeh-Ching Chung: Multiple Sequence Alignments with Regular Expression Constraints on a Cloud Service System. IJGHPC 5(3): 55-64 (2013).

Book

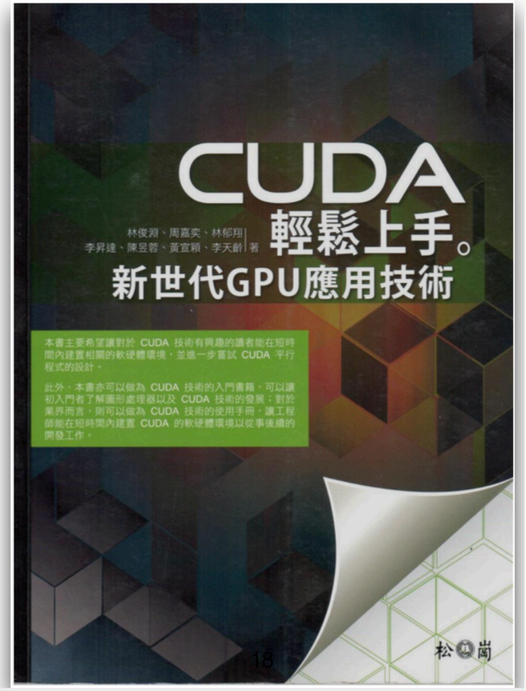
- CUDA 輕鬆上手，新世代GPU應用技術：林俊淵、周嘉奕、林郁翔、李昇達等人合著 (ISBN: 9572239171)


2011 台灣
CUDA程式設計比賽
佳作
貳萬元整
NT$ 20,000


2012台灣CUDA程式設計大賽
中華民國 102 年 1 月 25 日
第二名
憑票支付 第二名隊伍 NT$ 40,000
新台幣 肆萬元整


NVIDIA. CUDA 工程師認證證書
Certificate Of NVIDIA CUDA Engineers
林郁翔 通過 NVIDIA CUDA 認證考試，榮獲 "NVIDIA 認證 CUDA 工程師" 稱號，特頒此證。
This is to certify that LIN, YU-SHIANG has passed the NVIDIA CUDA certification test.
Simon See
Director for Solution Architect of NVIDIA
Certificate No.: 201309-01-0003


2017
COSCUP
開 源 人 年 會


CUDA
輕鬆上手。
新世代GPU應用技術
林俊源、周嘉奕、林郁翔
李昇達、陳昱蓉、黃宣穎、李天齡 著
本書主要希望讓對於 CUDA 技術有興趣的讀者能在短時間內建置相關的軟硬體環境，並進一步嘗試 CUDA 平行程式的設計。
此外，本書亦可以做為 CUDA 技術的入門書籍，可以讓初入門者了解圖形處理器以及 CUDA 技術的發展；對於業界而言，則可以做為 CUDA 技術的使用手冊，讓工程師能在短時間內建置 CUDA 的軟硬體環境以從事後續的開發工作。
松崗