



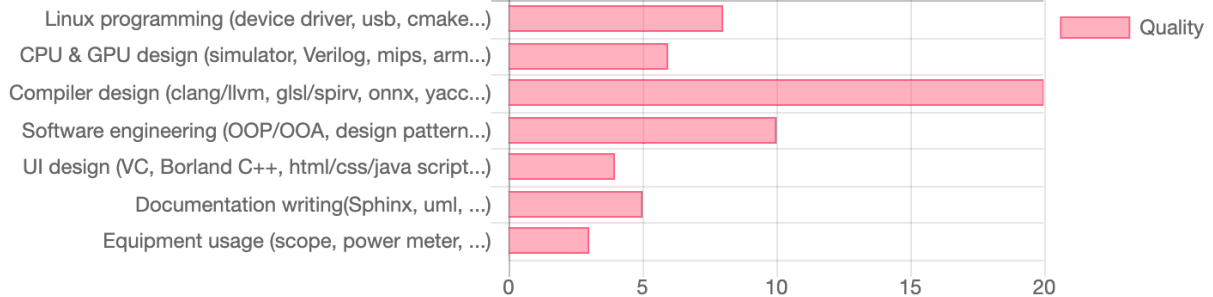
*I am a compiler developer with good experience in llvm cpu and gpu backend, lld linker, npu/onnx, c++, OpenGL/glsl and simulator, ..., and enjoy with compiler.*

## RESUME

### QUALIFICATION

Over 20 years experience in c/c++ programming, 10 years compiler toolchain related experience and research in parallel processing for master degree.

### SKILLS



### MY OPEN SOURCE PROJECT

I am proud of my work is accepted by LLVM documentation, appears at <http://llvm.org/docs/tutorial/#external-tutorials>

Tutorial: Create an LLVM Backend compiler <http://jonathan2251.github.io/lbd/index.html>

Tutorial: Create an LLVM Backend Toolchain <http://jonathan2251.github.io/lbt/index.html>

The concept of GPU compiler <http://jonathan2251.github.io/lbd/gpu.html>

### EDUCATION

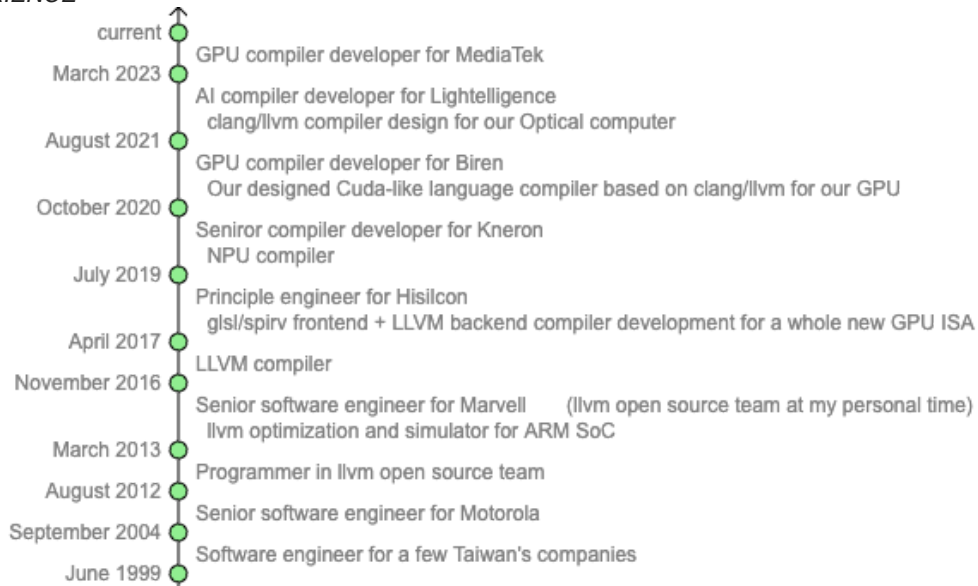
1997-1999 Master, June 1999, National Taiwan Normal University (國立台灣師範大學), Taipei, Major: Information Science.

1991-1994 B.S., June 1994, National Taiwan Technology University of Science and Technology (國立台灣科技大學), Taipei, Major: Industry Engineer.

### LICENSE

Taiwan National Computer Engineer license, 1995 高考資訊技師及格.

### EXPERIENCE



### THESIS OF MASTER DEGREE

[The Researches of Column Sort and Related Problems](#)

Conference : Search "行排列法簡化步驟之研究" on above link

### PROPOSAL OF PHD STUDY

[The Researches of Sorting Network and Related Algorithm](#)

### OTHER WORK

Take course "Image processing" and program: [Jpeg decoder](#)

Web and javascript: [As my resume](#) and [my personal web site](#)

[Graphviz](#): as some graph diagrams used in this CV. Source code: [mywork\\_1.gv](#) and [study\\_and\\_apply.gv](#)

## ACHIEVEMENT

### Lightelligence

Build both gnu and llvm toolchain and run qemu on RISCv from open source for our NPU of RISCv-coprocessor.  
 Survey open sources both TVM and SYCL/OpenCL for our NPU.  
 Survey and evaluate vendors' SW as well as HW in both AI and data science applications for optical computing.  
 Bargain with RISCv-vendor based on gnu/llvm toolchain I have built.  
 Lead the SW development for Aurora HW product and program the compiler backend myself.  
 Implement builtin-functions and our ISA's CodeGen on clang and llvm, respectively, and instruct other engineers how to do it.  
 Implement TaskGraph to work with TVM and Runtime for supporting Deep Learning Graph feature on our platform.

### Biren

Gpu CodGen for tensor instructions and usharpid handling.  
 Gpu optimization and bug fix.  
 Propose solution for parallel processing of our Cude-like language [async{...}](#).

### Kneron

Re-implement top 2 layers of our npu compiler for our common graph data structure to handle onnx.  
 Implement compiler input interface to support encryption-onnx and config file format.  
 Confirm solution for MLIR supporting.

### Hisilicon

GPU compiler scope:



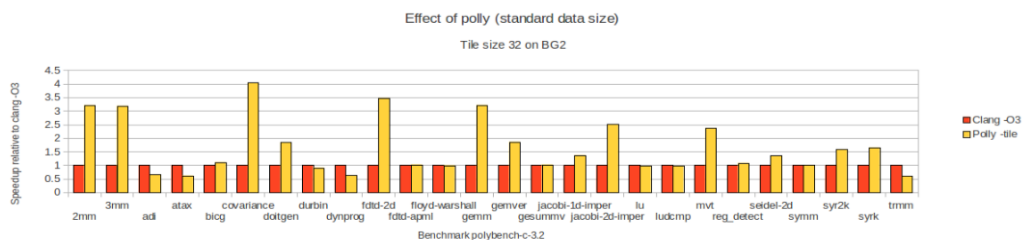
To support our new designed GPU for cell phone, ported from ARM. 20% of frontend is changed, 50% of backend is changed in aspect of number of code lines.

My work:

Implement compiler (frontend + llvm backend) for 80% of texture related API, [80 APIs totally here](#), by myself alone and document writing.  
 Instruct and help other engineers for the other 20% of texture related API, review their implementation and co-work with the leader of texture part of architect.  
 Implement Prefetch-Sample optimization for running 2D-sampling instructions by driver before load/run glsl shader.  
 Implement compiler supporting our GPU's load/store for RGBA fixed floating point format of vulkan (32, 16, 11, 10 and 2 bits; NaN Infinity) alone and document writing.

### Marvell

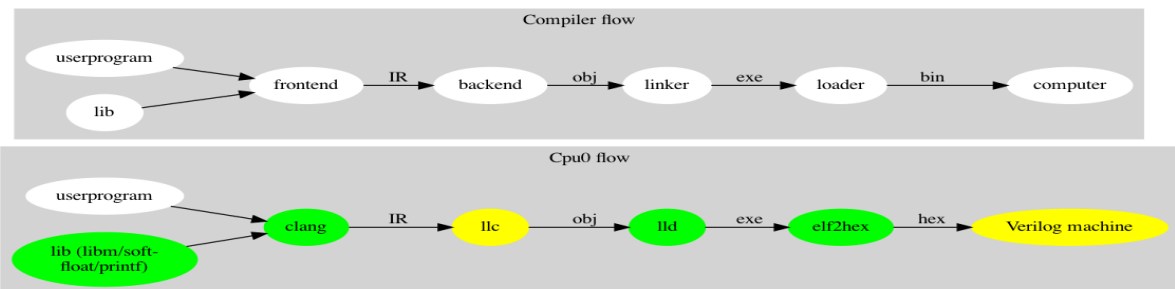
Implement semi-auto software system of running benchmark and generating report for gcc toolchain.  
 Demonstrate polly and the concept of polyhedral optimization model for Marvell llvm and gcc toolchain optimization. Polly is a software for loop optimization.



Implement co-simulator for a few Marvell's ARM based 64-bit cpu.  
 Propose and implement DSL on simulator to save tens of system verification in c++ coding.  
 Complete cmake to replace make for Csim.  
 Advantage: simpler and cross-os-platform than make.

### LLVM open source project

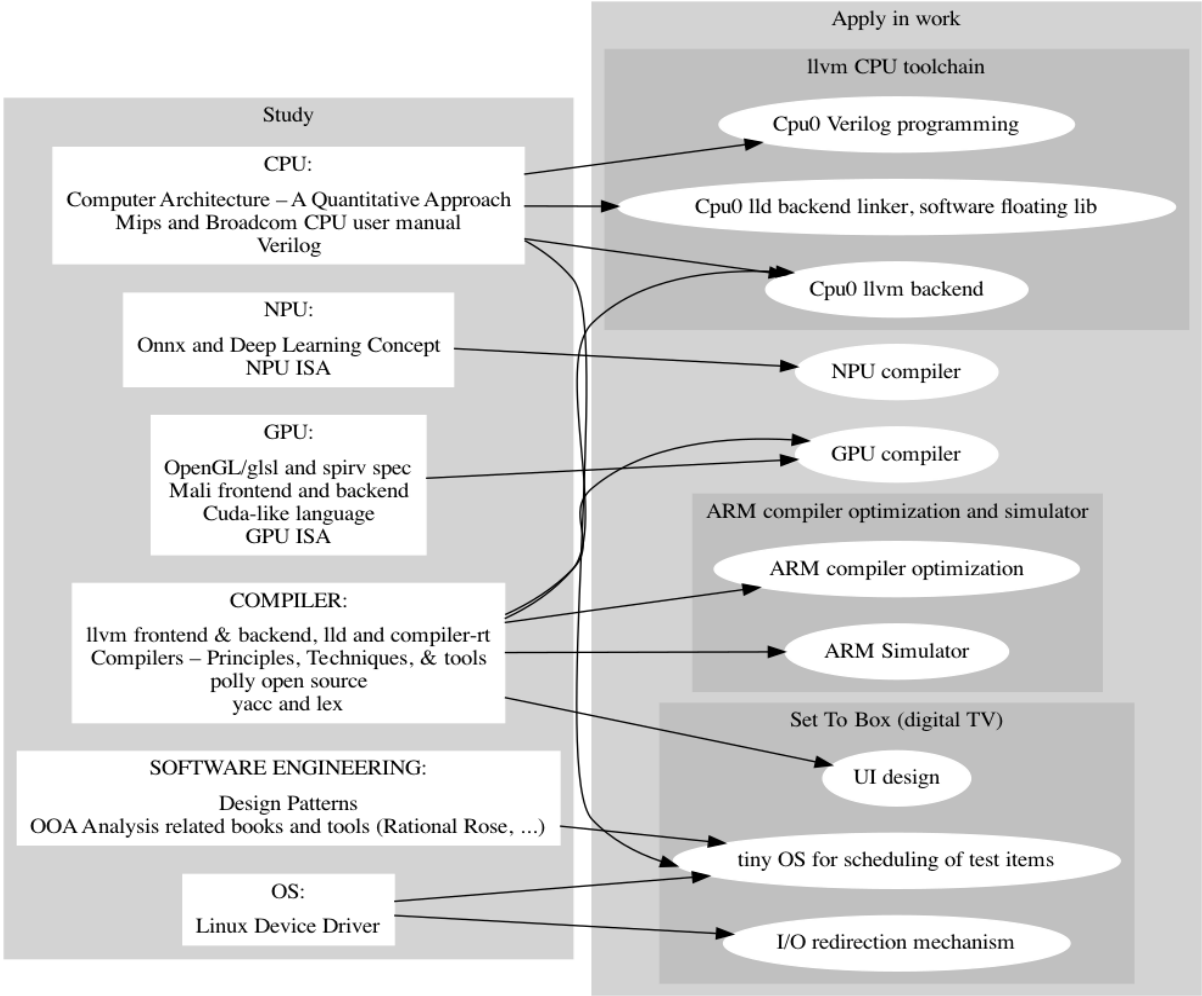
The lower half is the my llvm backend's work flow. Yellow and green parts are my implementation in my books.



### Mortorola

Develop Set Top Box's software framework.

Learning after school & applying in work



References

[My former manager's recommendation letter: https://jonathan2251.github.io/ws/en/RL\\_Marvell.pdf](https://jonathan2251.github.io/ws/en/RL_Marvell.pdf)