

# Fangsong Long

SOFTWARE ENGINEER · EMBEDDED DEVELOPER · FULLSTACK DEVELOPER · CLOUD DEVELOPER · SYSTEM SOFTWARE DEVELOPER

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## Education

### Chalmers University of Technology

Göteborg, Sweden

MASTER OF SOFTWARE ENGINEERING AND TECHNOLOGY

Aug. 2023 - Now

- Developing [FWiC](#), a website providing information to new international students who come to Sweden for the first time.

### Shanghai University

Shanghai, China

BACHELOR OF COMPUTER SCIENCE AND ENGINEERING

Sept. 2017 - Aug. 2021

- Technical director of [Shanghai University Open Source Community](#).
- Works for the University's Information Technology Office. Rewrite and maintain the OAuth system of the university.

### Self Study and Online Courses

TAKING NOTES ON MY [BLOG](#)

- Teaching myself compiler techniques, mathematical logic, automata theory, type theory, physics of semiconductors, and many other things.

## Experience

### Software Engineer

Shanghai, China

[PINGCAP, INC.](#)

Jun. 2020 - Sept. 2021 (Intern) , Sept. 2021 - Sept 2022

- Take part in developing [TiDB](#) & [TiKV](#), one of the most successful distributed databases around the world, focus mainly on the transaction part.
- Design, develop, and test the feature [Lock View](#). Help the user and the support engineer troubleshoot lock issues in the database system.
- Refactor TiKV's transaction [command system](#) with macro. Increase the readability and maintainability of the code.
- Develop [Tikipedia](#), an unofficial knowledge base for helping developers to look for unfamiliar concepts in the system.

### Software Engineer

Shanghai, China

[SYNYI AI, INC.](#)

Jun. 2018 - Sept. 2018

- Working on developing infrastructure for AI assisted medical diagnosis.
- Develop [Poplar](#), a high performance, web based open source annotation library for natural language processing needs. Increase the first paint performance by 10x.  
Now this library is used by not only the company itself but also some other leading AI medical health companies in China including Alihealth.

## Projects

### Extending RISC-V ISA to Optimize Convolution Operation in AIoT Scenery

BACHELOR GRADUATION PROJECT

Jan. - May 2021

- Benchmark the space and time consumption for a simple convolution operation on a RISC-V CPU when equipped with different combination of existing ISA (Instruction Set Architecture) modules with gem5 simulator.
- Design a custom ISA module for convolution operation.
- Extending RISC-V GNU Compiler Toolchain to generate binary code which uses the new commands.
- Extending gem5 simulator to simulate and benchmark the result binary.
- Binary size decreased by around 50%, performance increased by a factor of 10 when using the new commands to implement convolution.

### SHU RISC-V suite

A RISC-V MCU AND COMPILING TOOLCHAIN DESIGNED FOR IT

Sept. 2020 - Now

- [shuorv](#). A simple RISC-V MCU implementation in chisel, supports RV32I and basic interrupt handling, basic support of GPIO and Serial. Can boot FreeRTOS.
- [Come](#). A toy C like language and it's compiler tool chain, include a frontend, an optimizer, a RISC-V backend, a wasm backend, a RISC-V assembler and linker.
- We can compile a simple program written in Come to RISC-V asm and use shuasm to get the binary code, and run it on shuorv.

## A SWEDISH LEARNING PLATFORM

May 2024 - Present

- A Swedish learning system, based on articles on [Radio Sweden på lätt svenska](#), one can view the text of the article and click on unfamiliar words, and add them to a word book for reviewing.
- Local first PWA, developed with Next.js, deployed on [Cloudflare](#), make full use of edge computing and serverless architecture offered by the platform, 0 operating costs.
- Widely used and praised among my SFI classmates.

## SHUHelper

 shuosc/shuhelper

## AN INFORMATION SERVICE PLATFORM FOR UNIVERSITY STUDENTS

Sep. 2019 - Dec. 2022

- Supports displaying school calendar, remind the student when and which classroom they should go for next class, record assignments, etc.
- Use micro services architect. Deployed on a cloud Kubernetes cluster.
- Widely used among students.

## autoAPI

 SHUReeducation/autoAPI

## A LOW-CODE CRUD API GENERATING TOOL

Jun. 2021 - Dec. 2022

- Read configure from configure file, SQL migrating file and/or meta tables in MySQL or PostgreSQL
- Generating a standardized Golang RESTful micro service, which is ready to build with Docker and deployed with Kubernetes.

## And more ...

## EXPERIMENTAL PROJECTS

- [A high performance authentication gateway](#)
- [A TCP package sniffer](#)
- Real time operating system kernel for embedded systems in [C](#) and [Rust](#)
- Even more on my [GitHub](#)

## Skills

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<b>Languages</b>	<b>C/C++, Python, Typescript, Golang, Rust,</b> HTML, CSS, Kotlin, Lua, Erlang, Haskell, SQL, Scala, Agda, Lean
<b>Frontend</b>	<b>React,</b> Next.js, Svelte, Vue, Angular, htmx
<b>Backend</b>	Gin, beego, Django, fastapi, actix
<b>AI/ML</b>	<b>Pytorch, OpenCV,</b> ollama, gemini, langchain
<b>Databases</b>	<b>PostgreSQL, MySQL, SQLite, Redis,</b> MongoDB
<b>Cloud Platforms</b>	AWS, Cloudflare, Azure, Google Cloud Platform, Alibaba Cloud
<b>Misc</b>	Linux, Shell, Git, GitHub Actions, Kubernetes, LaTeX, Agile, SEO, PCB Design, 3D modeling, 3D printing
<b>Spoken Languages</b>	<b>Chinese, English,</b> Lätt Svenska, Einfaches Deutsch
<b>Soft Skills</b>	Communication & Teamwork, Open-Minded, Time Management, Adaptability

## Interests

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<b>Technical Writing</b>	I write blogs to record what I have learned.
<b>Open Source</b>	I have contributed to <a href="#">rust-analyzer</a> , <a href="#">next-on-pages</a> , <a href="#">chaos-mesh</a> , <a href="#">k210-hal</a> , etc.
<b>Electronic DIY</b>	I have built projects like automatic light, solar powered power bank, e-paper reader, etc.