

# Fang Han

in <https://www.linkedin.com/in/fang-han-368b1a124/>

🐙 <https://github.com/HanFa>

☎ +1-734-680-3913

✉ [hanfa@umich.edu](mailto:hanfa@umich.edu)

Current undergraduate student at University of Michigan major in Computer Science. Expected to graduate at Dec. 2018. I am a quick learner and have a strong foundation on algorithm designs, operating systems, networks and web systems.

## 📁 EXPERIENCE

- 
- **University of Michigan** Ann Arbor, MI  
*Edge Computing Research Assistant* Sept. 2018 - Present
    - Implement a remote computation architecture for augmented windshield display and facial recognition
    - Apply the idea of edge computing to stateful applications and evaluate their network performance in terms of latency. Reduce the overhead in cross-nodes data migration using previsioning.

⚙️: Socket programming, Computer Vision, Python
  - **University of Michigan** Ann Arbor, MI  
*Computer Architecture Research Assistant* Jun. 2017 - Feb. 2018
    - Write gem5 C++ source code of a stack-structured branch predictor inherited from L-Tage
    - Validate different implementations and evaluate the performance in terms of prediction correct rates and instructions per second. Obtain a 3% performance boost when the new structure is enabled in certain program counters
    - Tackle technical and programming problems for research lab-mates

⚙️: Research, gem5 Simulation, Debugging, C++, Python

## 📖 EDUCATION

- 
- **University of Michigan** Ann Arbor, MI  
*Computer Science B.S.E* Sept. 2016 - Dec. 2018
    - All semesters University Honors & Dean's List
    - Game Design Project (Ongoing): Recreate Zelda NES version using Unity in C# together with a customized level individually. Part of a 5-member team for future Unity games design and development
    - Computer Architecture Capstone Design Project: Design and Implement a 3-way-superscalar R10k pipeline microprocessor using System Verilog. Validate and synthesize the microprocessor architecture
  - **UM-SJTU Joint Institute at Shanghai Jiao Tong University** Shanghai, China  
*Electrical and Computer Engineering B.S.E* Sept. 2014 - Aug. 2018
    - Outstanding Undergraduate Scholarship & Dean's List
    - Software Capstone Design: Our project "Vehicle Simulation Platform On Android" sponsored by Intel, PNP China, provides the in-vehicle software developers with handy utilities such as dashboard display panels, mock location providers and other operational interfaces

## ⚙️ PROJECTS

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- **Distributed Computing & Data Mining** Shanghai, China  
*Million Song Dataset Analysis* Jun. 2018 - Sept. 2018
    - Exploit open-source distributed computing (Apache<sup>TM</sup> Hadoop) to analyse the entire 280GB dataset
    - Extract the data in .btf by a customized storage plugin for Drill
    - Apply data analysis on the artist locations and music style. Document the findings in L<sup>A</sup>T<sub>E</sub>X

⚙️: R Studio, Hadoop Ecosystem, Data Visualization, L<sup>A</sup>T<sub>E</sub>X
  - **Web Systems** Ann Arbor, MI  
*Insta485 Website Development* Jan. 2018 - Apr. 2018

Recreate the dynamic Instagram website passing all test cases, including:

    - Sqlite3 as user database. Flask for the server-side framework which maintains user sessions and handles different requests such as manage accounts and post photos
    - React for the client side framework to manage states for each web component. Other npm packages `infinite-scroll` to provider users with more seamless experience

- A search engine for article Wiki, ranked on tf-idf. The index was calculated using parallelized mapreduce algorithm, supported by Hadoop streaming

⚙️: JetBrains Webstorm, Python3, Flask, React, Hadoop MR Streaming, npm

## • Operating Systems

*Thread Library, Pager, File Systems*

Implement operating system kernel and pass all test cases, including:

- Multithreading library above the provided hardware interface
- OS pager for memory management
- Multiple-user, tree-structured and remote-accessible file system

⚙️: GNU Thread Library, Sockets, C++

## • Embedded Systems Design

*Package Sorting Robot*

Build a package sorting robot within a 4-member team, featured in:

- High efficiency and accuracy of packages classification compared with traditional human sorting process
- Automatic processing pipeline including delivering (conveyor belt), sorting (camera color detection and object classification), packing (bridge crane and controller) and monitoring (LCD display)

⚙️: SmartFusion FPGA, Fault Tolerant Algorithm Design, UART Protocol Programming

Ann Arbor, MI

Sept. 2017 – Dec. 2017

## 📖 COURSES

Database Management System	Computer Networks	Computer Game Design
Methods and Tools for Big Data	Intro to Cryptography	Intro to Operating Systems
Web Systems	Intro to Machine Learning	Embedded Systems
Data Structures & Algorithms	Computer Architecture & VLSI Design	Digital Signal Processing

## >\_SKILLS

- **Generals:** Independent Research, Software Programming, Teamwork, Technical Communication
- **Languages:**
  - $\geq 10000$  lines: Java, C/C++, Python, C#, HTML, System Verilog
  - $\geq 1000$  lines: Javascript, R, SQL, Matlab
  - Familiar with: Bash, Mathematica
- **Technologies & Softwares:** Unix, Hadoop ecosystem (Mapreduce, Drill, Spark, Avro), React, Flask, Android Studio, Unity, FPGA Programming,  $\LaTeX$ , Git, OpenCV, TensorFlow, Sklearn, gem5

## ⚽ LANGUAGES & INTERESTS

- Fully proficient in English technical communication and a Madarin native speaker
- Interested in game design and looking for Unity game-dev fellows to cooperate
- Skillful in Go(Weiqi) and badminton