

Buqian Zheng

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EDUCATION

Carnegie Mellon University

M.S. in Information Technology | Cum. GPA: 3.77/4

Aug 2018 | Pittsburgh, PA

Southwest Jiaotong University

B.E. in Electrical Engineering

July 2015 | Chengdu, China

SKILLS

Languages : Java • Python • C • Objective-C • Swift • Go • Standard ML • C++ • JavaScript • Racket • Ruby • HTML5 • CSS3

Tech Stacks : iOS • Android • MySQL • Redis • CUDA • OpenMP • MPI • Django • Jakarta EE • Hadoop • MapReduce • Spark • VueJS • Bootstrap • Tensorflow • Keras • UNIX • Linux • Vim • tmux • awk • Git • AWS • Docker • GCP • Azure

PROJECTS

Corgy: a GPU accelerated deep learning framework on iOS/macOS (Corgy.org)

Apr - May 2018 | Pittsburgh, PA

- Designed and built a cross-platform **deep learning framework** using **Swift** that can inference neural networks on iOS/macOS.
- Intensively made use of **Metal 2** to accelerate the computation using GPU and achieved more than **60x speedup** on iPhone 6s.
- Implemented and optimized the performance of widely used layers including **Convolutional**, ReLU, Pooling, Dropout, etc.
- Finished a demo app which is able to **recognize 20 classes of objects** with Tiny YOLO on iOS via camera in almost real time.

GraphRats: Optimization of an Animal Geographic Distribution Model using C

Mar 2018 | Pittsburgh, PA

- Optimized the serial program and achieved **5x speedup** by exploring cache locality and reducing duplicate computation.
- Used **OpenMP** to implement a parallel version of shared memory model. Achieved 8x more speedup on a 6-core machine.
- Used **MPICH** to implement another parallel version of memory passing model. Achieved 5x speedup under same benchmark.

High-Performance CUDA Circle Renderer

Feb 2018 | Pittsburgh, PA

- Built an image renderer with **Nvidia CUDA C** to render scene with millions depth-ordered overlapping translucent circles.
- Designed a grid-based parallel algorithm to optimize the work distribution between SMs and threads to fully exploit the parallelism of Multi-SMs of GPU and achieved **~140x speedup** comparing to serial CPU version (GTX 1080 vs. E5-1660).

Remote File Operation System using RPC Implemented using C

Feb 2018 | Pittsburgh, PA

- Implemented a **server** and an interposing **proxy library** using **C** to redirect calls on local file system to a remote server.
- Designed and implemented a **marshaling protocol** to serialize the data structure that needs to be transmitted during RPC.

Online Banking System Design and Implementation using Java

Nov 2017 - Dec 2017 | Pittsburgh, PA

- Implemented an **OOD** banking system and encapsulated modules into **RESTful micro-services** using **Jakarta EE** and **MySQL**.
- Containerized the system with **Docker** and deployed on the **AWS cloud**. Configured SSL to ensure the overall security.

Food recognition & scoring system using Python

Sept 2017 | Pittsburgh, PA

- Built a serverless eating habit evaluation system using **AWS Lambda** and **DynamoDB** based on diet images analyzing.
- Extracted nutrition data from images by analyzing recognition results from **AWS Rekognition**, **GCP Vision** and **Azure Vision**.

WORK EXPERIENCE

Zhuozhuo Technology | Full-Time iOS Developer

Mar 2016 - Jan 2017 | Chengdu, China

Snail Network Accelerator for Mobile Game using Objective-C

- Built iOS-side of a customized RPC framework, optimized the response protocol and reduced net traffic by 50%.
- Encapsulated the system VPN API into a singleton manager with easy-to-use finite-state-machine like APIs.
- Implemented ~20% of the new version user interface and corresponding new functions and business logic with **UIKit** and **Cocoa Touch Framework**, encapsulated 10+ animations into standalone components.

Fast Lemon VPN using Objective-C

- Developed the iOS dashboard widget for convenient VPN connection, implemented the user interface and business logic for user authentication and shop entrance, and the in-app purchase function.
- Created a tool written in Go to build and upload in-house ipa and generate itms URL so users can install from Safari.

COURSEWORK

Graduate : Parallel Computer Architecture and Programming • Distributed Systems • Intro to Computer Systems
Cloud Computing • Data Mining • Data Structure for Application • Web Application Development • Search Engine

MOOC : Advanced Software Construction in Java (MIT) • Learning From Data (Caltech) • Machine Learning (Stanford)