Yunan Zhang

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EDUCATION

PhD, Electrical and Computer Engineering — University of California, Riverside — *Sep 2020 - present*

Bachelor of Science, Computer Science — GPA: 3.86/4.00 — University of California, San Diego — *Sep 2018 - Apr 2020*

PROJECT

- GPGPU：

LightPy2Cuda **-** CUDA, python project *Sept 2020 - present*

- Bridged python and native CUDA with Cython to provide easy-to-use GPU programming libraries.
- Powered backed-end with highly optimized CUDA libraries includes cuBlas, Thrust, etc.

General purpose tensor processing units - research project *Sept 2020 - present*

- Leveraged Nvidia tensor core's fast tensor operators to general purpose programming with selected C/C++ cuda benchmarks.
- Targeted to heuristic compiler/convertor as a research goal.

Mixed-precision benchmark for CUDA **-** research project *Jun 2020 - Sept 2020*

- Introduced a benchmark suite for modern GPUs that leverages hardware supports to low precision floating points computation.
- Reflected the real performance gain after applying mixed-precision computing which includes kernel and conversion overheads.

- Architecture：

MIPS ISA Processor - Competition Project *Jun 2019 - Aug 2019*

- Simulated a 5-stages pipelined processor that supports MIPS32 ISA by using Verilog on Quartus and ModelSim.
- Improved the performance by adding data forwarding and basic branch predictions. Won a third-place award in class.

- Data science, CV, Recommender systems：

Kaggle competition - Predict whether a user would read a book from Goodreads *Sept 2019 - Oct 2019*

- Combined selected features include Jaccard similarity, cosine similarity, and the average rating for books on a collaborative filter.
- Placed 26th out of 847 on the leaderboard.

Kaggle competition - Predict the category of a book based on its review from Goodreads *Oct 2019 - Dec 2019*

- Applied mixed vectorizer from sklearn that involves TF-IDF and hashing vectorizer with feature union as a bridge.
- Classified data with Linear SVM and placed 13th out of 335 on the leaderboard.

Business closure prediction mode**l** - recommender system research project *Sept 2019 - Dec 2019*

- Resolved imbalance dataset using inverse weights justification to reduce the false-positive rate
- Applied TF-IDF vectorizer to extract key features from customer reviews with linear-SVM as a predictor.

Impact of Scenery on Regional Crime Rates and Citizen Wealth -Web mining and analysis project *Apr 2019 - Jun 2019*

- Analyzed the impact between scenery ratings, regional crime rates, and household income with web-scraped data by beautiful Soup.
- Applied predictors from sci-kit-learn, geospatial analysis, exploratory data analysis, correlations as major analyzing methods.

Motion detection - computer vision project *Sept 2019 - Dec 2019*

- Build an optical flow motion detector with OpenCV in python that detects all moving objects with bounding boxes highlighter.

- Networks:

JAVA web server - network projects *Jan 2020 - Apr 2020*

- Designed and implemented a web HTML server using java socket that supports multithreading.
- Implemented an apache xmlrpc server that does (1)video playing with self-defined ABR, (2) Hash-based remote file systems.

- Security:

Hacking experiments - a serial of hacking task *Jan 2020 - Apr 2020*

- Experienced well-designed tasks that involved buffer overwrites, side-channel attacks, SQL injection, network attacks, cryptography.

- Web and mobile applications:

When2Meet Biegewo - Meeting Scheduling Application *Jun 2019 - Dec 2019*

- Re-implemented the full functionality of the when2meet web version on WeChat's mini-program platform with multi-tasks function.
- Developed based on the WeChat developer tool and used its cloud function as backend and database deployment.

GasUp - Gas Station Search Application *Apr 2019 - Jun 2019*

- Designed and developed for both Android and IOS versions of the app with React-native.
- Deployed web scraper by using Flask on AWS as the back-end to get real-time gas price. Firebase is used as the main database.

It's all about the kids - Registration/Check-in Application *Oct 2018 - Dec 2018*

- Deployed a web application with CSS/HTML/JS for a food pantry serves 200 users every week in San Diego.
- Built based on the Google App Script platform. Used Google Sheet as a non-professionals friendly visual database.

WORK EXPERIENCE

Graduate Researcher, University of California, Riverside *Jun 2020 - present*

CS tutor, University of California, San Diego *Jun 2019 - Sep 2019*

Math tutor, Mira Costa College, Oceanside, California *Sep 2017 - May 2018*

SKILLS

Programming: Python, C/C++, CUDA C, Java, SQL, JavaScript, Verilog, R

OS/software/tool Unix/Linux, Windows, VS Code, Git/GitHub, Jupyter, Latex, AWS, nsight-tools, Quartus/ModelSim