**Qiang Zhang**

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**Education**

**M.S. Computer Science, (Exam-exempted), Beijing University of Technology,** **(2012.9 – 2015.6)**

**B.S. Computer Science, Beijing University of Technology,** **(2008.9 – 2012.6)**

**TECHNICAL SKILLS**

* 6 years of C/ C++ experience, proficient in C/C++, Skilled with Python, solid understand of knowledge about compile, link, load, and so on, excellent debugging capability.
* Skilled with Linux software development, performance and memory optimization, and relevant tools, understanding inter-process communication, multi-threaded programming knowledge.
* Familiar with Machine learning algorithm, logistic regression, cluster, proficient in the structure and mechanism of neural network, familiar with deep learning algorithm, Adam and so on optimization algorithm.
* Familiar with CNN, Image recognition, object detection algorithm.
* Familiar with multi-platform development such as FPGA, GPU, familiar with CUDA development.
* Proficient in hardware designing, with 2-years low-speed and 1-year high-speed hardware board designing and debugging experience.
* Have the ability of project management, skilled with git flow, pre-push code review, coding style, unit test, auto test, continuous integration.
* CET-6, good English technical document writing ability and effective English communication skills.

**Certification**

**Convolutional Neural Networks** by deeplearning.ai Andrew Ng on Coursera,earned as 98.9 on 2017.11

**Structuring Machine Learning Projects** by deeplearning.ai Andrew Ng on Coursera,earned as 96.7 on 2017.9

**Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization** by deeplearning.ai Andrew Ng on Coursera,earned as 97.6 on 2017.9

**Neural Networks and Deep Learning** by deeplearning.ai Andrew Ng on Coursera,earned as 97.9 on 2017.9

**Machine Learning** by Stanford University Andrew Ng on Coursera, earned as grade 98.4 on 2017.6

**Work Experience**

**Software Engineer @ Cadence Design Systems,** **Nov. 2016 -** **Present**

**SSD Firmware Engineer @ VIA Technologies, July 2015 –** **November 2016**

**Project Experience**

**Development of Deep Learning Library, Oct. 2017 - Present**

**In order to understanding all algorithms deeply, implement all the machine learning and deep learning algorithms from scratch. Refer to the implementation of Tensorflow and Mxnet.** [**https://github.com/Johnson9009/Rabbit\_Bear/tree/logistic\_regression**](https://github.com/Johnson9009/Rabbit_Bear/tree/logistic_regression)

* Implement a dataset iterator, which can read dataset as mini-batch and do shuffle, using python's generator to read in the dataset and do the normalization.
* Cost functions, L2, BinaryCrossEntropy, CrossEntropy, SigmoidCE, SoftmaxCE.
* Evaluation, accuracy, precision, recall, F1, AUC, mAP, ROC.
* Visualization. Several examples, linear regression, logistic regression, neural network.

**Design and Development of MDL New Architecture in Circuit Simulation System,** **Mar. 2017 - Present**

**Measure Dynamic Language is the measurement part of IC simulation system, the old architecture can't handle output inside the analysis, so lots of complex analyses such as Sweep, Monte Carlo, need to be implemented again in MDL, this increase the development cost of new feature and decrease the stability of simulation system. The new MDL architecture decompose measurements and complex analyses, so the code of complex analysis can be reused, it will simplify the simulation system and increase the stability of simulation system.**

* Design and implement the new MDL architecture, resolve binding of measurement and analysis, real time computation of measurement, output text or waveform result and other critical issues step by step.
* Responsible for applying the new MDL architecture to simple analyses such as transient, dc, ac analysis and complex analyses such as Monte Carlo, sweep analysis.
* Responsible for making the new MDL architecture as default behavior, clean and pass all the regression tests.

**Driver and Layer 3 of SSD firmware Development, August 2015 - Present**

**Designed and implemented firmware for the new generation SSD controller chip.**

* Development of NAND flash driver and XOR engine driver.
* Co-designed and completed the new hardware acceleration module XOR engine with logic colleagues, leading the unit and stress testing of XOR engine.
* Redesign Error Handling architecture, added Shift- Read, LDPC Soft-Decode and XOR recover functions, enhanced error correction capability of the previous three times, integration Empty-Page check, CRC errors and other error handling.

**Remote Diagnosis and Maintenance System for POS, December 2013 - February 2015**

**Cooperated with well-known POS manufacturer, combining hardware and software technology, to provide a real-time fault diagnosis, alarm and remote maintenance system for POS machines.**

* Designed PCIe remote diagnosis and maintenance card hardware with Spartan6 FPGA chip.
* Developed firmware and bootloader of PCIe card.
* Developed UEFI and Windows drivers of PCIe cards.
* Developed diagnosis and network communication UEFI application.

**NFC Smart Card Device, May 2013 - October 2013**

**Add NFC function to POS machines and other equipment with RFID reader, to achieve mobile payment.**

* Designed and simulated NFC antenna coil.
* Developed hardware, firmware and PC software of NFC smart card device.

**The Attractions and Monuments Touring System Based On Google Earth, December 2011 - July 2012**

**Capture motion of user through motion capture hardware, and then use it to control the tour in virtual sites of Google Earth.**

* Designed overall and detailed scheme.
* Designed hardware and firmware of six degrees freedom motion capture node by combining the use of accelerometers and gyroscopes.
* Designed hardware and firmware of Zigbee wireless transmission module.
* Organize and coordinate the team members.
* Developed sensor data fusion and filtering software, customized embedded version of Windows.

**Video Conference System, March 2011 - May 2011**

**Develop a real-time video conferencing system use audio and video codec technology combined with network communication technology.**

* Developed two audio codec module based on G729 and MP3.
* Developed voice activity detection module.

**Awards**

* Win the second prize in *2012 Intel Cup Undergraduate Electronic Design Contest - Embedded System Design Invitational Contest*.