# Jiyuan SHEN

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## EDUCATION

**Shanghai JiaoTong University**, China **Sep. 2013 – Jun. 2017**

B.S. in Computer Science and Technology

Cumulative GPA: 85.2/100, Major GPA: 86.4, Averaged Math Point: 93.4/100

Core Courses

Linear Algebra: (95), Discrete Math: (100), Probability and Statistics: (91), Computer Organization: (91), Computer Architecture: (94), Computer Architecture Cuda Project: (95), Software Engineering: (96), Linux Kernel: (91), Machine Learning and Data Mining: (89, rank 2nd), Software Engineering Project: (95), Massive Data Processing: (91, rank 3rd), Compiling Project: (95).

## PUBLICATIONS

[1] L. Chen, J. Li, **J. Shen** and L. Jiang, "Learning Variations and Defects: a Neural-network Retraining Method for Fault Tolerance in the RRAM Crossbar", 2017 *Design Automation and Test in Europe (DATE)* (submitted)
[2] **J.Shen**, X. Yang and Z. Fan, "3D Reconstruction of Plant Leaves from Rough Multi-Photos", 2017 *IEEE Winter Conference on Applications of Computer Vision* (submitted)

## RESEARCH EXPERIENCES

**Neural-network Retraining for Fault Tolerance** **Feb.2016 ~ Sep.2016**

Research Assistant, Advised by Prof. Li Jiang *Institute of Computer Architecture*

We use model of variation on memristor given by Vortex(DAC15) where features include normal distribution, random presence and weight-error relation. Instead of changing pages, we consider modifying topology of neuro-network to automatically adapt to memristor variations or modifying weight designs.

- Design redundancy combined with "Kuhn-Munkres" mapping method.
- Implement redundancy and mapping experiments on Mnist Data Set.
- Analyze experiment results and performance.
- Drafting Mapping Algorithm, Experiment and Analysis Parts and Revising.

**Leaf Three-dimensional Reconstruction with Multi-Photos** **Sep.2015 ~ Jan.2016**

Research Assistant, Advised by Prof. Bin Sheng *Visual Media and Data Management Center*

We first introduce a feature detection sequence as KNN ratio test, symmetry test and RANSAC after basic SURF feature detection to get the most robust feature detector. We also introduce Lookup Table that stores 2D coordinates of current frame and its triangled 3D coordinates, then by keeping track of 2D-3D pair during each iteration of processing new frames we can minimizes projection errors.

- Design the Filtering and Lookup Table.
- Implement the 3D reconstruction Experiments.
- Analyze the experiment results ad performance and drafting whole paper and Revising.

**Tracking the US presidential elections** **Jul.2016 ~ Sep.2016**

Research Intern, Advised by Prof. Song-chun Zhu *Center for Vision, Cognition, Learning and Autonomy*

We use hierarchical And-Or Graph jointly represent the latent structure of both texts and visuals. New topics are detected through a cluster sampling process for which we adopted SWC. Then the structure topic trajectory shows how topics emerge, evolve and disappear over time.

- Implementing experiments on datasets for year 2008 and 2012.
- Display the week-topic and tracking results on website.

**Medical Body Three-dimensional Scanning and Fusion** **Aug. 2016 ~**

Research Assistant, Advised by Prof. Li Jiang *Institute of Computer Architecture*

(Funded by Shanghai Sixth People's Hospital) Human skin proposes high standard for three-dimensional real-time scanning. Based on Kinect, we aim at implementing a fusion applied to pathological diagnosis.

- Implementing real-time reconstruction of medical body.

## SELECTED PROJECTS

**Secure TCP UDP Protocol (Class Award, 1/74)** **May.2016**

- Constructed Client-Server File Sharing with secure TCP protocol
- Developed Client-Server Transferring with UDP PLUS RDT3.0 tricks for secure protocol
- Designed user-friendly UI interface

**Patent Classification Modeling Based on Machine Learning (Class Award, 3/65)** **Mar.2016 ~ Apr.2016**

- Devised a classification algorithm mainly in learning kernel for patent classification by incorporating LIBNEAR, MINMAX, and finally a base classifier (SVM polynomial kernel)
- Evaluated with Japanese patents samples from Center for Brain-like Computing and Machine Intelligence and achieved results with high accuracy (94.9% in 37786 testing patent samples)

**Simplified C Language Compiler (Class Award, 2/74)** **Nov.2015 ~ Dec.2015**

- Constructed Lexical analyzer, syntax analyzer and semantic analyzer in Linux
- Compiled simplified C language into MIPS Assembly and implemented on SPIM simulator

**Quadrotor Tracking and Identifying Control System** **Oct.2014 ~ Nov.2014**

- Co-developed a quadrotor control system based on *A.R.Drone* platform
- Designed line-tracking and color-identifying algorithms
- Realized video streaming process and benchmarked image pattern recognition problem based on quadrotor built-in camera

**Advanced MIPS CPU Simulator with Multi-Cycle/Pipeline** **Mar.2014 ~ Apr.2014**

- Devised the simulator of each CPU component (including Memory, ALU, etc.) in C++ and connected them into advanced MIPS CPU simulators with multi-cycle and pipeline
- Implemented the multi-cycle CPU Simulator on a *Xilinx* Experiment Board in Verilog HDL.

## TECHNICAL STRENGHTHS

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|---|---|
| **Programming:** | C/C++, Python, Java, Android, HTML, Assembly Language, Verilog HDL |
| **Professional Tools** | Matlab, Octave, Cmake, LaTeX, OpenMP, Pthread |

## OTHER EXPERIENCES

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|---|---|
| Academic Excellence Scholarship (Top 5%) | 2014 |
| The Fourth Computer CCF Software Capacity Certification (C++) | 2015 |
| Summer Social Practice | 2014 |
| Athlete in the 45th Sports Meeting of SJTU | 2014 |
| Volunteer in Campus Run | 2015 |
| Volunteer in Shanghai International Marathon | 2014, 2015 |
| Class Commissary in charge of SEIEE Class Organization | 2013~2017 |
| Secretary in Network Department of SEIEE Student Union | 2013~2015 |
| Musical Instrument: Hulusi | |

**University of California Los Angeles** *2016.7 - 2016.9*
Research Intern, supervised by Prof. Song-chun Zhu *Department of Computer Science*

**Microsoft Research Asia** *2016.9 – Present*
Research Intern, supervised by Principal Researcher Lin-tao Zhang *System Group*