

# Pei QING

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## Education

- 2011--2012 **M.Sc. in Software Technology**, *The Hong Kong Polytechnic University*, Hong Kong, GPA:3.95/4 with distinction.
- 2006--2010 **B.Eng. in Computer Science and Technology**, *Tsinghua University*, Beijing, GPA:85/100.
- 2007--2010 **BS in Economics**, *Tsinghua University*, Beijing, second major.

## Experience

- 2012--present **Research Assistant**, *Biometrics Research Center, The Hong Kong Polytechnic University*, Hong Kong.  
**Data Source:** Samples of pulse, electrocardiogram, tongue photo, front face photo and breath composition analysis results from both healthy and diabetes people.  
**Objective:** To discover if some disease (diabetes in this case) has strong correlation with multiple physical signs of human body. Build a diagnosis model bases on the correlation to improve accuracy and consistency of diagnoses.  
**Methodology:** Iterations of "Feature Extraction → Fusion of Multiple Features → Feature Optimization → Machine Learning → Model Simplification" process.  
**Current Status:** We achieved an accuracy of 97.1% of diabetes diagnosis. By contrast, the accuracies using a single source of physical signs were 65% to 90%. Thus we have lowered the misdiagnosis rate by roughly an order of magnitude.
- 2010--2011 **Software Developer**, *Virtuos Games*, Shanghai.
  - Architected and implemented a cross-platform game on both PC/Mac and iPhone/iPad. In charge of the graphics performance optimization.
  - Designed synchronization tool with C++/Python to improve inter-department cooperation.
  - Acted as communicator between Technical and Art department to smooth out interdepartmental tasks.
  - Acted as technical leader of internal iOS project. My demonstration attracted 3 clients to sign contracts with Virtuos on new iOS projects.
- 2009 **Intern Programmer**, *Endress+Hauser*, Shanghai.
  - Designed 3D models with Modo to present previews of customized products.
  - Proposed and designed a product customization software with dynamic help for each part.
- 2008 **Volunteer, Assistant Officer**, *International Broadcast Center, 29th Olympic Games*, Beijing.
  - Collected needs from agents of different media. Contact officers from inside IBC to meet their needs, or turn to Director for request necessary resources.
  - Administrated attendance system of the venue, sending daily report on venue operations status.
- 2007-2009 **Vice Director, Director**, *Liaison Department, Student Union of Dept., Tsinghua University*, Beijing.
  - Coordinated actions on seeking sponsors for student activities.
  - Raised money for freshman orientation party.

## Projects

- 2013 **image-converter-for-kindle: Convert JPEG images to kindle screensaver size**, *Python*.  
Resize, crop, rotate and optimize images for the e-ink screen on Kindle.
- 2012 **hkputhesis: The Hong Kong Polytechnic University M.Sc. thesis latex template**, *LaTeX*.  
No one has ever made such a template for HKPU thesis. While I was writing my M.Sc. dissertation, I wrote the template and open-sourced it in case someone needed them in the future.
- 2011--2012 **3D Palm-print Recognition**, *MATLAB*.
  - Achieved a world leading 98.7% identification accuracy using 3D palm-print features. (Accuracies found in previous literature were less than 93%.)
  - 2X speedup (compared to searching sorted database) gained by utilizing 3D global feature index.

- 2010 **Real-time Parallel Decoding of Multi-view Video**, C++, Adviser: Lifeng Sun, *Scoring 93/100, top 10%*.
- Involved in the scheduling algorithm design for dual-view to 8-view MVC video.
  - Assisted to implement a MVC enc/decoding tool, focusing on the decoding.
  - Designed and implemented a 3D MVC player on the NVIDIA 3D Vision platform.
  - Adopted by CCTV to provide experimental 3D online broadcasting of the 2010 Asian Games.
- 2009 **Intelligent Video Processing**, C++.
- Implemented mean shift, GrabCut as pre-processors in the image processing chain.
  - Modified GrabCut by replacing user interaction with edge detection to achieve automatic object library creation.
  - Gave presentations in weekly discussion on the following paper: ARDECO, Interactive Video Cutout, Photo Clip Art, Video Object Cut and Paste.
- 2009 **Ray-tracing Renderer and Mesh Simplification**, C++, Computer Graphics course project, ranked 6/90+ students.
- Implemented a C++ ray-tracing renderer with Phong model.
  - Top 10% by rendering speed in class.
  - Implemented both vertex decimation and edge contraction algorithms to simplify a mesh to a customizable complexity.
  - Provided real-time preview of simplification progress with OpenGL.
- 2009 **PhoneMe: A cross-platform address book**, Java, Software Engineering course project, ranked 2/50+ students.
- Drafted and maintained requirements, design and technical document.
  - Committed 30% code of the 16,000-line project.
  - Allocated tasks to team members weekly and tracked daily progress and issues.
  - Held project discussion weekly to minimize mis-communication costs among members.
  - Worked as a team leader.
- 2008 **16-bit FPGA MIPS CPU**, VHDL.
- Designed a five-step pipelining structure.
  - Implemented a processor in VHDL.
  - Drove several peripherals including audio and video output.
  - Processor frequency can be up to 50MHz on Cyclone II FPGA.
  - Worked as a team leader.

## Publications

Bob Zhang, Wei Li, Pei Qing, and David Zhang. Palm-print classification by global features. *Systems, Man, and Cybernetics: Systems, IEEE Transactions on*, 43(2):370--378, 2013.

## Skills

Programming	Used in Working: MATLAB, C++, $\LaTeX$ . Used in Personal Code: Python, Java, R
Keynote	Proficient in making readable and clear slides using Apple Keynote or Microsoft Powerpoint. Experienced in delivering presentations.
Data Analyzing	Good at computer aided data analysis tools such as Excel, GNU R. Able to write programs to process and interpret data.
English	Fluent in spoken and written English, CET-6 652, TOEFL 107
Zhihu	<a href="https://www.zhihu.com/people/qingpei">zhihu.com/people/qingpei</a> , My questions and answers. (Chinese version of Quora)

## Awards

- 2009 **Outstanding Student Leaders in Department of Computer Science and Technology**, Tsinghua University.
- 2008 **Excellent Volunteer at International Broadcast Center (IBC)**, The Beijing Organizing Committee for the Games of the XXIX Olympiad.
- 2006 **First Prize in Haiwen Cup Shanghai High-school English Competition**, Shanghai Municipal Education Commission.
- 2004 **Second Prize in "21st Century Cup" National English Speaking Contest**, Foreign Language Teaching and Research Press.