# Peng Qi

Room 4-506, FIT Building, Tsinghua University, Beijing 100084

Phone: (86) 151-2000-3420 Email: qipeng.thu@gmail.com Homepage: http://qipeng.me/

## Education & Professional Experiences

**Research Assistant**, State Key Lab of Intelligent Technology & Systems (SKLIST), Tsinghua University (THU) *2012.7 ∼ present*

- Reproduced and experimented with various models and unsupervised learning algorithms with Matlab, including sparse RBM, lateral RBM, convolutional RBM, sparse coding, covariance model, Hybrid Monte Carlo, slab and spike models
- Conducted extensive experiments with covariance models on natural images

**Bachelor of Engineering, Outstanding Graduate**, School of Software (SS), THU *2008.9 ∼ 2012.7*

- Major GPA 89.9 / 100 (Major rank top 5%)

## Publications

- Hu, X, **Qi, P** and Zhang, B. Hierarchical K-Means Algorithm for Modeling Visual Area V2 Neurons. *ICONIP 2012*.
- **Qi, P**, Hu, X and Zhang, B. Least-square Covariance Model: An Efficient Model for Higher-order Statistics in Natural Images. *Neural Computation*. Under review.
- **Qi, P**, Hu, X and Zhang, B. Learning to Recognize Objects by Modeling Covariance Structures of Natural Images. To be submitted to *IJCAI 2013*.
- **Qi, P**, Zhang, R, Jin, X and Shen, D. Selecting Long Text Documents from Universal Knowledge Base to Enhance Short Text Classification. To be submitted to *AAAI 2013*.

## Undergraduate Research / Project Experiences

**Junction Extraction by Referencing Similar Models (Undergraduate Thesis)**, Lab of CG&CAD, SS, THU *2012.2 ∼ 2012.7*

- Proposed the feature extraction framework based on shape correspondence to avoid the misjudgement of bent rigid parts
- Designed the shape descriptor and comparison function for junction extraction

**Short Text Classification based on Universal Knowledge Base (UKB)**, Inst. of Info. Sys.&Eng., SS, THU *2011.3 ∼ 2011.8*

- Proposed a method for gauging the relativeness between long documents and short text copra
- Combined Latent Dirichlet Allocation (LDA) topic models to extract relevant knowledge from Wikipedia (as the UKB) to improve classification accuracy of short text documents

**Convolutional RBM for Matlab**, Open source project on Github *2012.10 ∼ present*

- Implemented CRBM algorithm for Matlab applications, accelerated with MEX / CUDA-MEX
- Conducted extensive experiments with CDBN as well as its variants

**"Quanr" Microblog(Team)**, Team Leader, **Bronze Prize** of the 4$^{th}$ Software Design Contest of THU (TSDC) *2011.3 ∼ 2011.6*

- Completed the structure of the website as well as the dynamic front-end pages with Struts 2
- Encapsulated an OAuth API and a search-engine-friendly interface with Struts 2 and plugins
- Coordinated members, supervised development, handled problems, and delivered presentations

**TexTriBute: A Distributed Framework for Text Retrieval (Team)**, Core Member, **Ranked 1$^{st}$** among course projects of *Advanced Data Structures* *2011.5 ∼ 2011.6*

- Proposed and implemented a simple map-reduce framework with Java Remote Invokation
- Completed a retrieval system based on Latent Semantic Indexing (LSI)
- Proposed an algorithm for generating searching snippets based on LSI

**IMBA (Team)**, Team Leader, **Award of Merit**, Ranked 2$^{nd}$ in the Sposor Division of the 3$^{rd}$ TDSC *2010.7 ∼ 2010.8*

- Independently implemented an search-based image segmentation algorithm
- Completed a system for detecting vehicles in parking lots

**Black-Shadow (Team)**, Team Leader, **Bronze Prize**, Ranked 5$^{th}$ in the 10$^{th}$ Collaborative AI Programming Contest *2008.10∼2008.12*

- Implemented a multi-agent controller with search, dynamic programming, greedy, and inference algorithms

**Other Project Experiences** *2008 ∼ 2012*

- 360-Degree Employee Survey System for Tiandi Energy, Inc.
- Internal Affairs Website for Network Support Center, THU
- Semantic Query Optimization in HyperSQL-DB the Open Source Database
- Semantic-directed LR Grammar Analyzer Generator
- Generation, Optimization, and Visualization of a Regex Engine
- Design and Implementation of a FPGA-based CPU with a simple instruction set (Y86) with VHDL
- Economic Road Construction Planning based on Terrain Information
- Multiple Implementations and Parameter Analysis of Phong's Lighting Model

## Honors

- 2011, National Scholarship (awarded to top 3% students)
- 2010, Citibank Scholarship (awarded for overall excellence)
- 2009, Ge-Ru Zheng Scholarship (awarded for study excellence)
- 2008, Freshman Scholarship (ranked 3$^{rd}$ of Guizhou Province in the National College Entrance Exam (NCEE))
- 2008, First Prize in National Olympiad in Informatics Provincial (NOIP) (exempted of NCEE and admitted to Tsinghua University)
- 2007, First Prize in NOIP

## Social Services

**Students' Union**, School of Software, Tsinghua University *2009 ∼ 2011*

- 2011, Vice President: Led a team of 20+ students to organize two school-level performances
- 2010, Office Director: Expedited working efficiency drastically by popularizing procedure standardization; Managed all accounts with over $8,000 cash flow inerrably
- 2009, Vice Director of Dept. Development: Planned various activities and archived documents

**Students' Association of Science and Technology**, School of Software, Tsinghua University *2008 ∼ 2009*

- 2009, Vice Director, Dept. Tech.: Organized three campus-scale lectures to give students an outlook of cutting-edge technologies as well as the job market
- 2008, Member of Dept. Contest Affairs: Participated in the preparation of the 2$^{nd}$ TSDC

**Volunteer Experiences** *2008 ∼ 2011*

- 2008∼2011, Volunteered for various on- and off-campus activities(Beijing)
- 2010, Investigation on the Traditional Dramas of Tian-Long (Guizhou), Bronze Prize of Practice Reports
- 2008∼2009, Education rescue programs, served underrepresented community by teaching children in the remote mountains (Guizhou) and children of migrant workers (Beijing)
- 2008∼2010, Taught an algorithm summer camp, designed the curriculum and programming assignments (Guizhou)
- 2008∼2009, Organized returning visits of excellent university students for symposia with high school students (Guizhou)

## Skills & Self-Evaluation

**Standardized Tests in English**

- GRE General (Verbal / Quantitative / Analytical Writing): 580 (77%) / 800 (94%) / 5.0 (92%)
- TOEFL iBT (Total / Reading / Listening / Speaking / Writing): 115 / 30 / 29 / 26 / 30

**Computer Capability**

- Programming languages: C / C++ (CUDA), Java, MATLAB (Jacket, MEX), Python, ASM, SQL, HTML / CSS, JavaScript; Capable of learning new languages fast
- Deep understandings of computer architecture, operating systems, compilers, data structures and algorithms

**Open Courses Accomplished** (coursera.org)
Machine Learning (Prof. Ng), Neural Networks for Machine Learning (Prof. Hinton), Prob. Graphical Models (Prof. Koller)

**Self-Evaluation**

- Strong learning ability; solid maths background; strong programming ability
- Fond of challenging endeavors; adept at generating novel ideas and exploiting them in practice; curious about and devoted to research of machine intelligence