Peng Qi

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EDUCATION &
PROFESSIONAL
EXPERIENCES

Stanford University   Sep. 2013 – present
Master of Science, Computer Science
- Course Highlights: Machine Learning, Statistical Learning Theory, Convex Optimization I & II, Natural Language Processing, Natural Language Understanding

Research Assistant, Stanford Artificial Intelligence Laboratory (Advisor: Andrew Ng)

Tsinghua University
Research Assistant, State Key Laboratory of Intelligent   Jul. 2011 – Jun. 2013
    Technology & Systems (Advisor: Xiaolin Hu)
Bachelor of Engineering (magna cum laude), School of Software Sep. 2008 – Jul. 2012
    Major GPA: 89.9 / 100   Major Rank: Top 5%

PUBLICATIONS

Andrew L. Maas, **Peng Qi**, Ziang Xie, Awni Y. Hannun, Daniel Jurafsky, and Andrew Y. Ng. Building DNN Acoustic Models for Large Vocabulary Speech Recognition. Submitted to *IEEE Transaction of Audio, Speech, and Language Processing*.

Peng Qi and Xiaolin Hu. Learning nonlinear statistical regularities in natural images by modeling the outer product of image intensities. *Neural computation*, 26(4):693–711, 2014.

Xiaolin Hu, Jianwei Zhang, **Peng Qi**, and Bo Zhang. Modeling response properties of V2 neurons using a hierarchical k-means model. *Neurocomputing*, 134:198–205, 2014.

Peng Qi, Shuochen Su, and Xiaolin Hu. Modeling outer products of features for image classification. In *Advanced Computational Intelligence (ICACI)*, 2013.

Xiaolin Hu, **Peng Qi**, and Bo Zhang. Hierarchical k-means algorithm for mod- eling visual area V2 neurons. In *Neural Information Processing*, pages 373–381, 2012. *Best Paper Award*

EXPERIENCE

Stanford A.I. Lab   Sep. 2013 – present
Large-Vocabulary Continuous Speech Recognition with Deep Learning
- Built an HMM-GMM speech recognition system on the largest speech corpus in academia (Fisher+Switchboard 2100-hour corpus) in Kaldi, and prepared the first evaluation pipeline for the RT-03 evaluation set in Kaldi
- Analyzed performances and various properties as DNN acoustic models scale up
- Investigated the effect of incorporating auxiliary information and varying network structure (CS229 Project)

CS 224U Natural Language Understanding Course Project   Mar. 2013 – present
Learning Unsupervised Semantic Word Vectors for Sentence Completion
- Implemented various unsupervised semantic word vector models and applied them to sentence completion
- Proposed a novel neural language model extending `word2vec` for sentence completion

CS 229T Statistical Learning Theory Course Project   Jan. 2013 – present
Empirically Efficient Methods for Training Deep Neural Networks
- Implemented and investigated the training efficiency of various adaptive gradient methods and accelerated gradient methods applied to deep neural networks

Contributing Open Source Projects
Caffe ↗
- Implemented a framework for generic solvers
- Implemented Nesterov's Accelerated Gradient solver and AdaGrad solver
- Contributed a number of neuron layers (Leaky ReLU, Mean-variance normalization)
- Compatibility issues / bug fixes for Mac OS

Kaldi ↗
- Contributed the first training recipe for the Fisher/Switchboard mixed speech corpus (the largest speech corpus in use in academia)
- A bug fix for Kaldi's speaker identification for better speaker heldout training

ConvolutionalRBM.m ↗ (Owner)
- An implementation of Lee *et al.*'s convolutional restricted Boltzmann machine model in Matlab, MEX (C++/CUDA)

GraphCut ↗
- A fast CPU/GPU hybrid implementation for min-cut problems in grid graphs

Other Project Experiences (Highlights)   2008 – 2012
- Semantic Query Optimization in HyperSQL-DB the Open Source Database
- Semantic-directed LR Grammar Analyzer Generator ↗

ACADEMIC SERVICE *Teaching:*
- TA, CS 224D Deep Learning for Natural Language Processing (Spring 2015)
- TA, CS 124 From Languages to Information (Winter 2015)
- TA, CS 224S Spoken Language Processing (Spring 2014)
- TA, CS 145 Introduction to Databases (Summer 2014)
- Tutor, CS 145 Introduction to Databases, CS 107 Computer Organization and Systems, CS 245 Database Systems Principles

Paper Reviewing: IEEE TNNLS, ICACI 2013

MISCELLANEOUS *Honors:* China's National Scholarship (top 3% university-wide at Tsinghua), Freshman Scholarship (provincial top 10 in college entrance exam), and other merit-based awards

Programming: Experienced with C/C++, CUDA, Matlab/MEX, Python, Java; Working knowledge of *nix Bash, Javascript (node.js/jQuery), Haskell, PHP, C#, HTML5/CSS3, Perl, etc.

Leadership: Vice president of Students' Union, School of Software, Tsinghua University (2010 – 2011)

Part-time activities: Chinese Translation ↗ of Philip J. Guo's *The Ph.D. Grind* ↗