

# Chao Qin

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## OBJECTIVE

Seeking a software engineer in a challenging and active team

## SUMMARY OF QUALIFICATIONS

- In-depth understanding of topics in machine learning and speech technology, data mining, text processing,
- Extensive hands-on experience in developing and applying machine learning techniques to speech applications
- Proficient in algorithm development and software implementation
- Excellent coding skills in C/C++, Matlab and scripting in Unix/Linux environment
- Highly independent and self-motivated

## SCHOLARSHIPS AND AWARDS

**Sep. 2007 to Mar. 2008:** Marie Curie Fellowship for Early Stage Researcher from European Union

**Aug. 2007:** Best student paper award (Interspeech 2007) by International Speech Communication Association

## EDUCATION

**Aug. 2007 to May. 2011:** PhD in Computer Science, University of California, Merced, USA (GPA: 4/4)

**Aug. 2003 to Aug. 2005:** MPhil in Electronic Engineering, The Chinese University of Hong Kong, PRC (GPA: 3.8/4)

**Sep. 1999 to Jun. 2003:** BSc in Electronic Information, Nanjing University, PRC (GPA: 3.6/4)

## TECHNICAL EXPERTISE

### *Knowledge*

**Machine learning:** supervised/unsupervised learning, mixture models, neural networks, sequential data, latent variables

**Speech:** articulatory/acoustic modeling, speech recognition/synthesis, speaker adaptation/recognition, speech animation

**Data mining:** classification, regression, clustering, data analysis, web mining

**Large-scale computing:** MapReduce and Hadoop (basic)

### *Computing*

**Languages:** Matlab and C/C++ (proficient), Java (prior experience), Python (basic), Perl and Bash (intermediate)

**Operation systems:** Unix/Linux (proficient), Mac (prior experience)

**Tools:** HTK and Edinburgh Speech Tools for speech processing (proficient), SVN for version control (prior experience)

## RESEARCH EXPERIENCE

**Mar. 2008 to May. 2011:** research assistant at *EECS, School of Engineering, University of California, Merced*

Working on data-driven approaches to articulatory speech processing

- Developed algorithms to adapt predictive models of tongue by affine transformation and numerical optimization
- Developed algorithms for missing data reconstruction by probabilistic mixture model and unsupervised learning
- Developed software for data pre-processing and visualization of large-scale articulatory speech databases

Advisor: Prof. Miguel Á. Carreira-Perpiñán

**Sep. 2007 to Mar. 2008:** research fellow at *The Centre for Speech Technology Research, University of Edinburgh*

Worked on predictive modeling of tongue shapes

- Developed landmark based predictive models for tongue by multivariate linear regression and neural networks

Advisors: Prof. Steve Renals and Dr. Korin Richmond

**Sep. 2005 to Jul. 2007:** research assistant at *Adaptive System Lab, OGI/Oregon Health and Science University*  
Worked on data-driven approaches to articulatory inversion and robotic arm inverse kinematics

- Developed algorithms for articulatory inversion by regression, mean-shift, mixture model, probabilistic tracking
- Implemented software for Gaussian mixture model, Gaussian mean-shift, and feature extraction from speech

Advisor: Prof. Miguel Á. Carreira-Perpiñán

**Aug. 2003 to Aug. 2005:** research assistant at *DSP and Speech Lab, The Chinese University of Hong Kong*  
Worked on automatic speech recognition and speaker recognition

- Developed speaker authentication by combining speaker and utterance verification via support vector machine
- Implemented hidden Markov model based Cantonese digit recognition and MFCC acoustic front-end in C

Advisor: Prof. Tan Lee and Prof. Pak-Chung Ching

## PUBLICATIONS

**C. Qin** and M. Á. Carreira-Perpiñán (2010): “Articulatory inversion of American English /ɹ/ by conditional density modes.” *Proc. Interspeech 2010* (talk), pp. 1998–2001.

**C. Qin** and M. Á. Carreira-Perpiñán and Mohsen Farhadloo (2010): “Adaptation of a tongue shape model by local feature transformations.” *Proc. Interspeech 2010* (poster), pp. 1596–1599.

**C. Qin** and M. Á. Carreira-Perpiñán (2010): “Estimating missing data sequences in X-ray microbeam recordings.” *Proc. Interspeech 2010* (poster), 1592–1595.

N. H. Zheng, **C. Qin**, Tan Lee, and P. C. Ching (2010): “CU2C: A dual-condition Cantonese speech database for speaker recognition applications.” Book project, to appear.

**C. Qin** and M. Á. Carreira-Perpiñán (2010): “Reconstructing the full tongue contour from EMA/X-Ray microbeam.” *IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP 2010)* (talk), pp. 4190–4193.

**C. Qin** and M. Á. Carreira-Perpiñán (2009): “The geometry of the articulator region that produces a speech sound.” *43th Annual Asilomar Conference on Signals, Systems, and Computers (ASILOMARSSC 2009)* (talk), pp. 1742–1746.

**C. Qin** and M. Á. Carreira-Perpiñán (2009): “Adaptation of a predictive model of tongue shapes.” *Proc. Interspeech 2009* (poster), pp. 772–775.

**C. Qin**, M. A. Carreira-Perpiñán, K. Richmond, A. Wrench, and S. Renals (2008): “Predicting tongue shapes from a few landmark locations.” *Proc. Interspeech 2008* (talk), pp. 2306–2309.

**C. Qin**, M. Á. Carreira-Perpiñán (2008): “Trajectory inverse kinematics by conditional density modes.” *IEEE Int. Conf. on Robotics and Automation (ICRA 2008)* (talk), pp. 1979–1986.

**C. Qin** and M. Á. Carreira-Perpiñán (2008): “Trajectory inverse kinematics by nonlinear, nongaussian tracking.” *IEEE Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP 2008)* (poster), pp. 2057–2060.

**C. Qin** and M. Á. Carreira-Perpiñán (2007): “An empirical investigation of the nonuniqueness in the acoustic-to-articulatory mapping.” *Proc. Interspeech 2007* (talk), pp. 74–77. **Best student paper award.**

**C. Qin** and M. Á. Carreira-Perpiñán (2007): “A comparison of acoustic features for articulatory inversion.” *Proc. Interspeech 2007* (talk), pp. 2469–2472.

**C. Qin**, Tan Lee, and H. Meng (2005): “On anti-model design for Cantonese verbal information verification.” *Proc. 8th National Conference on Man-Machine Speech Communication (NCMMSC 2005)* (talk).

N. H. Zheng, **C. Qin**, Tan Lee, and P. C. Ching (2005): “CU2C: A dual-condition Cantonese speech database for speaker recognition applications.” *Proc. Oriental COCODA (COCOSDA 2005)* (talk), pp. 67–72.

**C. Qin** and Tan Lee (2004): “Cantonese verbal information verification system using GMM-based anti-models.” *Proc. Int. Sym. Chinese Spoken Language Processing (ISCSLP 2004)* (poster), pp. 297–300.

## PROFESSIONAL ACTIVITIES

**Member of:** *Affiliated member of IEEE Signal Processing Society, IEEE student member*

**Reviewer:** *Journal of Acoustical Society of America Express Letter* (2010), *IEEE Transaction on Robotics* (2009), *IEEE Conference on Automation Science and Engineering (CASE 2008)*, *IEEE International Conference on Robotics and Biomimetics (ROBIO 2008)*, *Neurocomputing* (2007)

## LANGUAGE

English (fluent), Mandarin (native tongue), Cantonese (fluent)