

Curriculum Vitae

Lim Boon Pang

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Education

- **University of Illinois at Urbana Champaign, IL, USA**
 - PhD in Electrical and Computer Engineering 2005-2010
 - M Sc in Electrical and Computer Engineering 2000-2001
 - B Sc in Electrical and Computer Engineering, International Minor (Japanese) 1997-2000

Professional Interests

- Research and Development in Speech Technology
- Signal Processing, Automatic Speech Recognition, Information Retrieval.

Awards and Honors

- Outstanding Mentor Award for Science Mentorship Programme 2013,2014,2015,2016
- A*STAR, National Science Scholarship 2005
- Commissioned Officer of the Singapore Armed Forces 2002
- Public Service Commission, Overseas Merit Scholarship 1997
- National Team, International Olympiad for Informatics, at Eindhoven 1995

Work Experience

Scientist II, Human Language Technology Group

Institute for Infocomm Research, Singapore

(2010-present)

Research Activities

- Participated yearly in NIST Keyword Spotting Evaluation (BABEL) from 2013 to 2016.
- Presented in NIST KWS workshop in Baltimore, USA, May 2014.
- Constructed and manage distribution for whispered speech corpora.
- Constructed lexical and linguistic resources for Singapore Chinese Dialects.
- Work on acoustic model adaptation methods for low resource speech conditions – with focus on whispering and low-resource languages.

Professional Activities and Student Outreach

- Member of Organizing Committee, INTERSPEECH 2014
- Mentored high school students on various research projects under the Science Mentorship programme and Junior-College H3 schemes.

Development and Prototyping Work

- Technical Lead in development of I2R's cloud-based real-time ASR technology.
- Designed and developed software architecture for multilingual, multi-platform mobile device speech recognition prototype.
- Delivered multilingual speech recognition platform for 4-million dollar speech and language innovation cluster project (SLIC).
- Mentoring of in-house software engineers, over technologies across the entire stack.

Acoustic/language model development, multi-threaded server backends, to client sdk and api design.)

- Put in place infrastructure for continuous integration for acoustic modeling.
- Work on Acoustic Modeling collaboration with industry: Baidu, Sogou and Tencent.
- Support and implement various projects and lab prototypes, Speech-to-Speech Translation, low-latency broadcast news transcription, live-speaking transcription, voice command and control and lattice-based keyword spotting demos.
- Business Training - took part in Startup Bootcamp organized by Lithan Academy

UIUC Electrical and Computer Engineering Department

Graduate Research Assistant, Statistical Speech Technology Group (2009-2010)

Automatic Recognition of Whispered Speech

Teaching Assistant, ECE190 Introduction to Computer Engineering (2007-2008)

Developed interactive teaching tool for Unix shell environments.

Taught students in a tutorial/classroom setting.

Graduate Research Assistant, Computational Linguistics Lab (2005-2009)

Research into Latent Semantic Indexing.

Research on Whispered Speech Recognition

Research Engineer, Speech Processing Lab.

Institute for Infocomm Research, Singapore (2003-2004)

Developed prototype to automatically build a dialog system for finding out information from manuals (Automatic Dialog Generation)

Language Identification Research

National Service

4th Battalion, Singapore Infantry Regiment (2002-2003)

Internet Research and Development Unit, National University of Singapore

Student, developed StockNet (stock market web prototype) (1994)

Skills and Experience

Computing/Engineering: Digital Signal Processing, LaTeX, proficient with Unix/Linux systems, network programming/engineering, advanced computer architecture, object oriented software design, software engineering and programming methodology.

Speech Technology: Acoustic and Language Modeling, adaptation with LSTM, DNN and GMMs.

Programming Languages: C/C++, Java, Javascript, Matlab/octave, PERL, python, x86/MIPS/LC-3 assembly.

Platforms/Tools: Kaldi Open source Speech Recognition Toolkit, OpenFST, HTK speech recognition toolkit, SRI language modeling toolkit, GTK+, Microsoft Visual Studio (C++), GNU Scientific Library, Android, Meteor

Natural Languages: Bilingual in English and Mandarin, spoken Teochew, Japanese (1 yr)

Publications

JOURNALS

I-Fan Chen, LIM B.P., CHEN F.Y.N., Chin-Hui Lee, **A Keyword-Aware Language Modeling Approach to Spoken Keyword Search**, *Journal of Signal Processing Systems*, 2014

Peixuan Lee, Hilary Toh, LIM B.P., CHEN F.Y.N., **Detecting speaker change in background audio streams**, *Proceedings of Meetings on Acoustics*, 2013

CONFERENCES

2016

V. LIM, H. ANG, E. Lee, LIM B.P, **Towards an interactive voice agent for Singapore Hokkien**, *Human Agent Interaction*, 2016

B.P. LIM, F. Wong, Y. Li, J.W. Bay, **Transfer Learning with Bottleneck Feature Networks for Whispered Speech Recognition**, *17th Annual Conference of the International Speech Communication Association (INTERSPEECH) 2016*

Van Hai Do, Nancy F. Chen, Boon Pang Lim, Mark Hasegawa-Johnson, **Analysis of Mismatched Transcriptions Generated by Humans and Machines for Under-Resourced Languages**, *17th Annual Conference of the International Speech Communication Association (INTERSPEECH) 2016*

Yuling Gu, Boon Pang Lim, Nancy F. Chen: **Perception of Tone in Whispered Mandarin Sentences: The Case for Singapore Mandarin**, *17th Annual Conference of the International Speech Communication Association (INTERSPEECH)*, 2016

2015

Wenda Chen, Nancy F. Chen, Boon Pang Lim, Bin Ma, **Corpus-based Pronunciation Variation Rule Analysis for Singapore English**, *SLaTE Workshop*, 2015

Andreea I. Niculescu, Mei Qing Lim, Seno Adi Wibowo, Kheng Hui Yeo, Boon Pang Lim, Michael Popow, Dan Chia, and Rafael E. Banchs, **An HCI solution to sustainable driving: IDA – The Intelligent driver assistant**, in *proceedings of CHI 2015*.

Andreea I. Niculescu, Mei Quin Lim, Seno A. Wibowo, Kheng Hui Yeo, Boon Pang Lim, Michael Popow, Dan Chia, Rafael E. Banchs: **Designing IDA - An Intelligent Driver Assistant for Smart City Parking in Singapore**. *15th International Conference on Human-Computer Interaction (INTERACT) 2015*

Niculescu, Andreea I., Ngoc Thuy Huong Thai, Chongjia Ni, Boon Pang Lim, Kheng Hui Yeo, and Rafael E. Banchs. **Smarter Driving with IDA, the Intelligent Driving Assistant for Singapore**, *16th Annual Conference of the International Speech Communication Association (INTERSPEECH)*. 2015.

S. Sivadas, B.P. Lim, N.T.H.H. Thai, M. Meyyappan, B. Ma, H.Z. Li, **A Cloud Based Large Vocabulary Speech Recognition System for Tamil**, in *proceedings of the 14th Tamil Internet Conference*, 2015

CHEN F.Y.N., I-Fan Chen, Van Tung Pham, Haihua Xu, XIAO X., Tze Siong Lau, Su Jun Leow, LIM B.P., LEUNG C.C., , Chin-Hui Lee, Alvina Goh, Eng Siong Chng, MA B., LI H.Z., **Low-Resource Keyword Search Strategies for Tamil**, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2015

I.-F. Chen, Chongjia Ni, Boon Pang Lim, Nancy F. Chen, C.-H. Lee: **A keyword-aware grammar framework for LVCSR-based spoken keyword search**, in *proceedings of ICASSP*, 2015

TONG R., CHEN F.Y.N., LIM B.P., B. MA, H.Z. Li, **Tokenizing Fundamental Frequency Variation for Mandarin Tone Error Detection**, *IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP)*, 2015

2014

I-Fan Chen, Ni Chongjia, Lim Boon Pang, Nancy Chen Fang Yih, Chin-Hui Lee, **A Novel Keyword+LVCSR-Filler Based Grammar Network Representation for Spoken Keyword Search**, *International Symposium on Chinese Spoken Language Processing (ISCSLP)* 2014

N.F. Chen, B.P. Lim, H.G. Ngo, H. Xu, V. T. Pham, B. Ma, H.Z. Li, **Strategies for Vietnamese Keyword Search**, *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2014

TONG R., LIM B.P., CHEN F.Y.N., MA B., LI H.Z., **“Subspace Gaussian Mixture Model for Computer-Assisted Language Learning”**, *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2014

Van Tung Pham, Haihua Xu, CHEN F.Y.N., , LIM B.P., CHNG E.S., LI H.Z., **“Discriminative score normalization for keyword search decision”**, *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2014

P. X. Lee, D. Wee, H. Toh, LIM B.P., CHEN F.Y.N., MA B., **A Whispered Mandarin Corpus for Speech Technology Applications**, *15th Annual Conference of the International Speech Communication Association (INTERSPEECH)*, 2014

EARLIER WORK

B-P Lim, **“Computational Differences between Whispered and Non-whispered Speech”**, PhD Thesis, Dec 2010

B.P. Lim, Richard W. Sproat, **“Using Latent Semantics for Named Entity Translation”**, *International Conference on Computer Processing of Oriental Languages (ICCPOL)*, 2006

B-P Lim, H. Li and B. Ma **“Using Local and Global Phonotactical Features in Chinese Dialect Identification”**, *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2005

B.P. Lim, H. Li and Y. Chen, **“Language Identification through Large Vocabulary Continuous Speech Recognition”**, *International Conference on Chinese Spoken Language Processing (ISCSLP)*, 2004

B.P. Lim, B. Ma, H.Z. Li, **“Using Semantic Context to Improve Voice Keyword Mining”**, *International Conference on Chinese Computing*, 2005

B-P Lim, **“Design of Ternary Coefficient Filters”**, M Sc Thesis, 2001

Referees

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