



**KONG AIK LEE, PH.D.**

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**Google Scholar:**

**Citations:** 1511, **h-index:** 21, **i10-index:** 34

<https://scholar.google.com/citations?user=SZegiA4AAAAJ&hl=en>

## ACADEMIC BACKGROUND

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<b>Doctor of Philosophy</b>	<b>2001 – 2005</b>
Nanyang Technological University (NTU), Singapore Dissertation: Subband Adaptive Algorithms for High-Order Transversal Filters	
<b>Bachelor of Electrical Engineering</b>	<b>1994 – 1999</b>
University Technology Malaysia (UTM), Malaysia Grade: First Class Honours (CPA: 3.84/4.00) <b>Award:</b> Dean's letter for outstanding academic record	

## SKILLS

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<b>Research interest:</b>	<ul style="list-style-type: none"><li>▪ Speaker recognition and characterization</li><li>▪ Multilingual recognition and identification</li><li>▪ Digital signal processing</li></ul>
<b>Computer language:</b>	MATLAB, Python, C, C++, Perl,
<b>Languages:</b>	English, Chinese, Malay

## WORKING EXPERIENCE

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<b>Scientist</b> @ Institute for Infocomm Research (I <sup>2</sup> R), A*STAR, Singapore	<b>Feb 2006 – Present</b>
<i>Principal Investigator, Speaker and Language Recognition</i>	<b>Apr 2012 – Present</b>
<b>Research Assistant</b> @ Nanyang Technological University, Singapore	<b>Jun 2005 – Jan 2006</b>
<b>Project Officer</b> @ Nanyang Technological University, Singapore	<b>Nov 2001 – May 2005</b>
<b>Software Engineer</b> @ Weike Singapore Pte. Ltd., Singapore	<b>Jul 2001 – Oct 2001</b>
<b>Electrical Engineer</b> @ Aiwa Singapore Ltd., Singapore	<b>May 1999 – Jun 2001</b>

## TEACHING EXPERIENCE

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<b>Lecturer</b> (part time) @ Nanyang Technological University, Singapore	<b>Oct 2011 – Dec 2013</b>
<i>EE6424 Digital Audio and Speech Signal Processing</i>	

## Awards

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- IEEE Ganesh N. Ramaswamy Memorial Student Grant 2015**, awarded for best student paper on speaker and language recognition area published in IEEE ICASSP 2015 **2015**  
S. E. Shepstone, **K. A. Lee**, H. Li, Z.-H. Tan, S. H. Jensen, "Source-specific informative prior for i-vector extraction," in *Proc. IEEE ICASSP*, pp. 4185 – 4189, 2015.
- IEEE Ganesh N. Ramaswamy Memorial Student Grant 2014**, awarded for best student paper on speaker and language recognition area published in IEEE ICASSP 2014 **2014**  
L. Chen, **K. A. Lee**, B. Ma, W. Guo, H. Li, and L. R. Dai, "Minimum divergence estimation of speaker prior in multi-session PLDA scoring," in *Proc. IEEE ICASSP*, 2014, pp. 4036 – 4039.
- Prestigious Engineering Achievement Award, Institution of Engineers, Singapore** **2013**  
Citation: For the outstanding contributions to voiceprint technology

## Research Expeditions and Grants

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- Voice Authentication for Digital Banking** **2014 - 2015**  
Principal Investigator, industry funding of **SGD \$287,300**
- Speaker Verification via VHF Communication Channel to Authenticate Shipmaster with Pilotage Exemption**, Maritime and Port Authority of Singapore **2012 – 2013**  
Co-Investigator, research funding of **SGD \$185,500**
- Robust Speaker Recognition for Smart Home**, SERC Home2015 Program **2010 – 2012**  
Co-Investigator, research funding of **SGD \$340,000**

## PROFESSIONAL ACTIVITIES

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- Editorship :**      ○ **Editor**, Elsevier Computer Speech and Language (2016 – present)
- Organization of International Conferences and Workshops:**
- INTERSPEECH 2015 (Technical Program Committee, Area Chair, Speaker and Language Processing)
  - INTERSPEECH 2014 (Technical Program Committee, Area Chair, Speaker and Language Processing)
  - WOCCI 2014 (Local Chair)
  - Odyssey 2016 (Scientific Committee)
  - Odyssey 2014 (Scientific Committee)
  - Odyssey 2012 (Local Organizing Committee)
- Membership:**      ○ Senior member, IEEE

- Reviewer:**
- IEEE/ACM Transactions on Audio, Speech, and Language Processing
  - IEEE Signal Processing Letters
  - EURASIP Journal on Audio, Speech, and Music Processing
  - Elsevier Speech Communication
  - Elsevier Pattern Recognition Letters
  - Elsevier Signal Processing
  - Elsevier Computer Speech and Language
  - ISCA Interspeech (2010 – Present)
  - IEEE ICASSP (2011 – Present)
  - APSIPA Annual Summit and Conference (2010 – Present)

## SELECTED PUBLICATIONS

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### BOOK AND JOURNAL

- S. E. Shepstone, K. A. Lee, H. Li, Z.-H. Tan, S. H. Jensen, "Total variability modeling using source-specific priors," *IEEE/ACM Trans. Audio, Speech, Lang. Process.*, vol. 24, no. 3, pp. 504 - 517, Mar 2016.
- L. Chen, K. A. Lee, H. Li, and L. R. Dai, "Quasi-factorial prior for i-vector extraction," *IEEE Signal Processing Letters*, vol. 22, no. 12, pp. 2484 – 2488, Dec 2015.
- A. Larcher, K. A. Lee, B. Ma, H. Li, "Text-dependent speaker verification: Classifiers, databases and RSR2015," *Speech Communication*, vol. 60, pp. 56 - 77, May 2014.
- Y. Jiang, K. A. Lee and L. Wang<sup>1</sup>, "PLDA in the i-supervector space for text-independent speaker verification," *EURASIP Journal on Audio, Speech, and Music Processing*, 2014
- H. Li, B. Ma, and K. A. Lee, "Spoken language recognition: from fundamentals to practice," *Proceedings of the IEEE*, vol. 101, no. 5, pp. 1136 - 1159, May 2013. [[Impact Factor of 5.629](#)]
- V. Hautamaki, T. Kinnunen, F. Sedlak, K. A. Lee, B. Ma, and H. Li, "Sparse Classifier Fusion for Speaker Verification," *IEEE Trans. Audio, Speech, Lang. Process.*, vol. 21, no. 8, pp. 1558 - 7916, Apr. 2013.
- T. Kinnunen, R. Saeidi, F. Sedlak, K. A. Lee, J. Sandberg, M. Hansson-Sandsten, and H. Li, "Low-variance multitaper MFCC features: a case study in robust speaker verification," *IEEE Trans. Audio, Speech, Lang. Process.*, vol. 20, no. 7, pp. 1990 - 2001, Sep. 2012.
- K. A. Lee, C. You, H. Li, T. Kinnunen, and K. C. Sim, "Using discrete probabilities with Bhattacharyya measure for SVM-based speaker verification," *IEEE Trans. Audio, Speech, Lang. Process.*, vol. 19, no. 4, pp. 861 - 869, May 2011.
- C. You, K. A. Lee, and H. Li, "GMM-SVM kernel with Bhattacharyya-based distance for speaker recognition," *IEEE Trans. Audio, Speech, Lang. Process.*, vol. 18, no. 6, pp. 1300 - 1312, Aug. 2010.
- K. A. Lee, W. S. Gan, and S. M. Kuo, *Subband Adaptive Filtering: Theory and Implementation*, Wiley, 2009. [[Available on Amazon.com](#)]
- C. You, K. A. Lee, and H. Li, "An SVM kernel with GMM-supervector based on the Bhattacharyya distance for speaker recognition," *IEEE Signal Processing Lett.*, vol. 16, no. 1, Jan. 2009.
- K. A. Lee and W. S. Gan, "Inherent decorrelating and least perturbation properties of the normalized subband adaptive filter," *IEEE Trans. Signal Processing*, vol. 54, no. 11, Nov. 2006.
- K. A. Lee and W. S. Gan, "On the subband orthogonality of cosine-modulated filter banks," *IEEE Trans. Circuits Syst. II*, vol. 53, no. 8, Aug. 2006.
- K. A. Lee and W. S. Gan, "Improving convergence of the NLMS algorithm using constrained subband updates," *IEEE Signal Processing Lett.*, vol. 11, no. 9, pp. 736-739, Sep. 2004.

### CONFERENCE

- K. A. Lee, H. Li, L. Deng, V. Hautamaki *et al*, "The 2015 NIST language recognition evaluation: the shared view of I2R, Fantastic4 and SingaMS," accepted, *INTERSPEECH* 2016.

- S. E. Shepstone, K. A. Lee, H. Li, Z.-H. Tan, S. H. Jensen, "Source-specific informative prior for i-vector extraction," in *Proc. IEEE ICASSP*, pp. 4185 – 4189, 2015.
- L. Chen, K. A. Lee, B. Ma, W. Guo, H. Li, and L. R. Dai, "Minimum divergence estimation of speaker prior in multi-session PLDA scoring," in *Proc. ICASSP*, 2014, pp. 4036 – 4039.
- K. A. Lee, A. Larcher, C. H. You, B. Ma, and H. Li, "Multi-session PLDA Scoring of I-vector for partially open-set speaker detection," in *Proc. INTERSPEECH*, 2013, pp. 3651 - 3655.
- R. Saeidi, K. A. Lee, T. Kinnunen et al, "I4U submission to NIST SRE 2012: a large-scale collaborative effort for noise-robust speaker verification," in *Proc Interspeech* 2013, pp. 1986-1990.
- A. Larcher, K.A. Lee, B. MA, and H. Li, "Phonetically-constrained PLDA modelling for text-dependent speaker verification with multiple short-utterances," in *Proc. IEEE ICASSP*, 2013, pp. 7673 - 7677.
- Y. Jiang, K. A. Lee, Z. Tang, B. Ma, A. Larcher, and H. Li, "PLDA modeling in I-vector and Supervector space for speaker verification," in *Proc. INTERSPEECH*, Wed.07b.01, Sep. 2012.
- E. Wang, K. A. Lee, B. Ma, H. Li, W. Guo, and L. Dai, "Factored covariance modeling for text-independent speaker verification," in *Proc. ICASSP*, pp. 4856 - 4859, 2011.
- E. Wang, K. A. Lee, B. Ma, H. Li, W. Guo, and L. Dai, "Factor analysis based spatial correlation modeling for speaker verification," in *Proc. ISCSLP*, pp. 166 - 170, 2010. **[Best student paper award]**
- E. Wang, K. A. Lee, B. Ma, H. Li, W. Guo, and L. Dai, "The estimation and kernel metric of spectral correlation for text-independent speaker verification," in *Proc. INTERSPEECH*, pp. 1065 - 1068, 2010.
- K. C. Sim and K. A. Lee, "Adaptive score fusion using weighted logistic linear regression for spoken language recognition," in *Proc. IEEE ICASSP*, pp. 5018 – 5021, Mar. 2010.
- C. You, K. A. Lee, and H. Li "A GMM supervector kernel with Bhattacharyya distance for SVM based speaker recognition," in *Proc. IEEE ICASSP*, pp. 4221 – 4224, 2009.
- K. A. Lee, C. You, H. Li, T. Kinnunen, and D. Zhu "Characterizing speech utterances for speaker verification with sequence kernel SVM," in *Proc. INTERSPEECH*, pp. 1397 – 1400, 2008.
- K. A. Lee, C. You, and H. Li, "Spoken Language Recognition using Support Vector Machines with Generative Front-End," in *Proc. IEEE ICASSP*, pp. 4153 – 4156, 2008.
- K. A. Lee, C. You, H. Li, and T. Kinnunen, "A GMM-based Probabilistic Sequence Kernel for Speaker Verification," in *Proc. INTERSPEECH*, pp. 294 – 297, Aug. 2007.
- K. A. Lee and W. S. Gan "On Delayless Architecture for the Normalized Subband Adaptive Filter," in *Proc. IEEE ICME*, pp. 1595 – 1598, Jul. 2007.
- K. A. Lee, H. Sun, R. Tong, B. Ma, M. Dong, C. You, D. Zhu, C. W. E. Koh, L. Wang, T. Kinnunen, E. S. Chng, and H. Li, "The IIR submission to CSLP 2006 speaker recognition evaluation," *Lecture Note in Artificial Intelligence (ISCSLP)*, vol. 4274, 2006, pp. 494-505.
- K. A. Lee, W. S. Gan, and S. M. Kuo, "Mean-square performance analysis of the normalized subband adaptive filter," in *Proc. Asilomar Conf. on Signal, Systems and Computers*, Pacific Grove, California, 2006.
- K. A. Lee and W. S. Gan, "On the subband orthogonality of cosine-modulated filter banks," in *Proc. International Symposium on Intelligent Signal Processing and Communication Systems*, Hong Kong, pp. 681-684, 2005.

#### PATENT AND TECHNICAL DISCLOSURE

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- A. Larcher, K. A. Lee, H. Thai, B. Ma, "Method and system for dual scoring for text-dependent speaker verification," US patent (US 2013/0325473 A1).
- K. A. Lee, B. Ma, and H. Li, "Speaker verification makes its debut in smartphone," *SLTC (Speech and Language Technical Committee) Newsletter*, Feb. 2013.