

## Ian R. Lane

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EDUCATION      Ph.D. Program in Informatics, April 2003–Present  
Kyoto University, Japan (Expected completion date: March 2006)  
Advisor: Prof. Tatsuya Kawahara  
(Joint Research with ATR Spoken Language Communication Research Lab.)

Masters of Informatics, March 2003  
Kyoto University, Japan  
Advisor: Prof. Hiroshi G. Okuno

Bachelor of Technology, Information Engineering, Honors, March 2000  
Massey University, New Zealand

RESEARCH AND      *Intern Researcher*  
EXPERIENCE      *Dept. Spoken Language Research*

**ATR Spoken Language  
Communication Research  
Laboratories, Kyoto, Japan  
April 2005–Present**

Developed methods to automatically detect speech recognition errors. Incorporated knowledge sources external to the ASR decoder, specifically, modeling the domain of the back-end application, and modeling discourse flow. Supervision provided by Prof. Tatsuya Kawahara (Kyoto University) and Dr. Genichiro Kikui (ATR).

*Intern Researcher*  
*Dept. Acoustics and Speech Research*

**ATR Spoken Language  
Communication Research  
Laboratories, Kyoto, Japan  
April 2003–March 2005**

Researched and implemented novel techniques to detect out-of-domain utterances in spoken language systems. Designed experimental scenarios and collected data from novice users performing dialogue via the ATR speech-to-speech translation system. Designed and developed (in C++) topic-classification and out-of-domain detection modules to be released with the ATRASR (ATR Automatic Speech Recognition) toolkit. Supervision provided by Prof. Tatsuya Kawahara (Kyoto University) and Dr. Satoshi Nakamura (ATR).

*Research Assistant*  
*Dept. of Acoustic and Speech Research*

**ATR Spoken Language  
Translation Laboratories,  
Kyoto, Japan  
August 2002 - March 2003**

Researched and implemented a novel speech recognition framework combining topic detection and topic-dependent language modeling. Developed an effective topic-backoff scheme which applies detailed topic models when topic detection is confident and wider models that cover multiple topics in cases of uncertainty. Research was performed under the supervision of Dr. Tomoko Matsui (ATR) and Prof. Tatsuya Kawahara (Kyoto University).

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*Research Assistant*  
*Dept. Acoustic and Speech Research*

**ATR Spoken Language  
Translation Laboratories,  
Kyoto, Japan  
Summer 2001**

Investigated robust acoustic features for speech recognition in noisy environments (DARPA SPINE II evaluation task). Primarily used the HTK toolkit for AM training and ASR decoding. Designed and developed PLP feature extraction module for the in-house speech recognition decoder. Research performed under the supervision of Dr. Konstantin Markov (ATR).

### SKILLS

- Languages: native English, proficient Japanese
- Computer Skills: Python, C, C++, Matlab
- Experienced in Unix/Linux operating systems, HTK toolkit, CMU-Cambridge LM toolkit, Julius ASR decoder.
- Strong technical writing skills

### AWARDS

- Japanese Government Monbukagakusyo PhD. Scholarship, 2003-2006
- Japanese Government Monbusyo Graduate Scholarship, 2001-2003
- PEC Scholarship for top student in Electronics and Design, Massey University, 1999

### AFFILIATIONS

- Member of IEEE Signal Processing Society, Acoustic Society of Japan and Institute of Electronics, Information and Communication Engineers.
- President, Foreign Student Association, International Students Institute, Kyoto, 2002

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- JOURNALS
- I. Lane, T. Kawahara, T. Matsui, and S. Nakamura, *Out-of-Domain Detection via Topic Classification Confidence*. IEEE Trans. Speech and Audio Processing, 2005. (Conditional acceptance)
- I. Lane, and T. Kawahara *Verification of Speech Recognition Results Incorporating In-domain Confidence and Discourse Coherence Measures*. IEICE Trans., 2005. (Accepted for publication)
- I. Lane, T. Kawahara, T. Matsui, and S. Nakamura, *Dialogue Speech Recognition by Combining Hierarchical Topic Classification and Language Model Switching*. IEICE Trans., Vol. E88-D, No.3, pp.446–454, 2005.
- SELECTED  
CONFERENCE  
PAPERS
- I. Lane, and T. Kawahara, *Utterance Verification Incorporating In-domain Confidence and Discourse Coherence Measures*. In Proc, INTERSPEECH, pp.421–424, 2005.
- I. Lane, and T. Kawahara, *Incorporating Dialogue Context and Topic Clustering in Out-of-Domain Detection*. In Proc. IEEE-ICASSP, Vol. 1, pp.1045–1048, 2005.
- I. Lane, T. Kawahara, T. Matsui, and S. Nakamura, *Topic Classification and Verification Modeling for Out-of-domain Utterance Detection*. In Proc. ICSLP, pp. 2197–2200, 2004.
- I. Lane, T. Kawahara, T. Matsui, and S. Nakamura, *Out-of-Domain Detection based on Confidence Measures from Multiple Topic Classification*. In Proc. IEEE-ICASSP, Vol. 1, pp.757–760, 2004.
- I. Lane, T. Matsui, S. Nakamura, and T. Kawahara, *Hierarchical Topic Classification for Dialog Speech Recognition based on Language Model Switching*. In Proc. EUROSPEECH, pp. 429–432, 2003.
- I. Lane, T. Kawahara, and T. Matsui, *Language Model Switching based on Topic Detection for Dialog Speech Recognition*. In Proc. IEEE-ICASSP, Vol. 1, pp.616–619, 2003.
- S. Ueno, I. R. Lane, and T. Kawahara, *Example-based training of Dialogue Planning Incorporating User and Situation Models*. In Proc. ICSLP, pp. 2837–2840, 2004.
- PATENTS
- A speech recognition framework combining hierarchical topic detection and topic-dependent language modeling*, application number: 2002-365074, 17/12/2002 (Japanese).
- Method to detect out-of-domain user input in spoken language systems*, application number: 2003-164836, 1/12/2003 (Japanese).
- Method to assess recognition confidence incorporating measures of in-domain confidence and discourse coherence*, application number: 2005-196887, 7/5/2005 (Japanese).