

# Antoine Raux

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## Research Interests

- Spoken Dialog Systems
- Speech Recognition and Synthesis
- Language Technologies

## Education

### **PhD in Language and Information Technologies** (8/2002-9/2008 (expected))

Carnegie Mellon University, Pittsburgh, USA.

Advisor: Maxine Eskenazi.

### **MS in Intelligence Science and Technology** (9/2000-3/2002)

Kyoto University, Kyoto, Japan.

Advisors: Tatsuya Kawahara and Hiroshi Okuno.

Thesis: "Intelligibility Assessment and Adaptive Drill Generation for a Computer-Assisted Pronunciation Learning System".

### **Engineering Degree** (9/1996-7/1999)

Ecole Polytechnique, Paris, France.

Major in Computer Science.

## Work Experience

### **Intern – Advanced Telecommunications Research, Kyoto, Japan** (6/2007 - 8/2007)

I investigated strategies used by participants in a human-human dialog to maintain engagement and elicit decisions, based on a new corpus of dialogs between travel agents and potential customers.

### **Intern - Microsoft Research, Redmond, WA** (1/2006 - 5/2006)

I investigated novel approaches to human-machine spoken interaction that allow the system and the user to speak at the same time efficiently rather than in a strictly ordered sequence.

**Invited Researcher - Kyoto University, Kyoto, Japan (4/2002 - 7/2002)**

I designed and implemented a computer-based pronunciation tutor for foreign language learning. This included the use of speech recognition to spot pronunciation errors and the application of the research I did for my Masters Thesis for intelligibility evaluation. The tutor is currently in use in ESL classes for undergraduate students at Kyoto University.

**Scientific Advisor - Cerego Japan, Inc., Tokyo, Japan (10/2000 - 3/2002)**

I designed and built prototypes of Computer Assisted Language Learning software based on cognitive theories of human learning.

**Intern - Toshiba R&D Center, Kawasaki, Japan (1/2000 - 8/2000)**

I built a speech recognizer for French. This included training acoustic models on a large corpus of French speech, designing and running evaluation experiments, and designing and implementing improvements based on phonological phenomena specific to the French language.

**Intern - Advanced Telecommunications Research, Kyoto, Japan (4/1999-7/1999)**

I worked on networking and human-computer interaction, and created a personal agent for a Quality of Service management system.

## Software Development

**Co-author of Olympus**, an open-source architecture supporting spoken dialog systems. A dozen dialog systems have been built on Olympus both at CMU and elsewhere.

**Main author of Let's Go**, a spoken dialog system providing bus schedule information for the Greater Pittsburgh metropolitan area. Accessible to the public thanks to a collaboration with the Port Authority of Allegheny County, Let's Go has handled more than 55,000 calls between March 2005 and March 2008.

**Author of HUGO**, a Computer-Assisted Language Learning program that uses speech recognition and other advanced technologies to diagnose the student's weaknesses and provide targeted remedial practice drills. HUGO is currently in use in English classes for undergraduate students at Kyoto University.

## Teaching

**Co-organizer** of a tutorial on building practical dialog systems at the ACL 2008 conference (Summer 2008)

**Teaching assistant** for Algorithms for Natural Language Processing (Fall 2006)

**Supervised a summer intern** for work on "The Effects of Lexical Entrainment on Medium-Term Language Learning in Non-Native Speakers" (Summer 2005)

**Teaching assistant** for Speech II: Phonetics, Prosody, Perception, and Synthesis (Spring 2004)

## Activities and Awards

- Co-organizer of the First Young Researchers' Roundtable on Spoken Dialog Systems, held in Lisbon, Portugal on 1 September 2005
- Honorable Mention, Second CMU LTI Student Research Symposium (2004) for the presentation of my work on acoustic adaptation by PLSA
- Co-organizer of Dialogs on Dialogs, student group on spoken dialog systems
- International Exchange Excellence Prize (Ecole Polytechnique, 2000)

## Skills

- Languages: French (native), English (fluent), Japanese (fluent speaking, good reading, JLPT level 1), Spanish (7 years of academic study).
- Operating Systems: Windows, Unix
- Programming languages: C++, Perl, Java, C, Scheme

## Publications

Optimizing Endpointing Thresholds using Dialogue Features in a Spoken Dialogue System, A. Raux and M. Eskenazi, *SIGdial 2008*, Columbus, OH, USA.

A Multi-Layer Architecture for Semi-Synchronous Event-Driven Dialog Management, A. Raux and M. Eskenazi, *ASRU 2007*, Kyoto, Japan.

Comparing Spoken Dialog Corpora Collected with Recruited Subjects versus Real Users, Ai, H., Raux, A., Bohus, D., Eskenazi, M., and Litman, D. *8th SIGDial Workshop on Discourse and Dialog*, Antwerp, Belgium.

Olympus: an open-source framework for conversational spoken language interface research, D. Bohus, A. Raux, T. Harris, M. Eskenazi, and A. Rudnicky, *HLT-NAACL 2007 workshop on Bridging the Gap: Academic and Industrial Research in Dialog Technology*, Rochester, NY, USA.

Conquest - an Open-Source Dialog System for Conferences, D. Bohus, S. Grau, D. Huggins-Daines, V. Keri, G. Krishna, R. Kumar, A. Raux, and S. Tomko, *HLT-NAACL 2007*, Rochester, NY, USA.

Using Speech Recognition for Just-in-Time Language Learning. M. Eskenazi, A. Raux, E. Harris, 2006, *Journal of the Acoustic Society of America*, vol 120, no. 5, pt.2, p.3138.

Doing Research on a Deployed Spoken Dialog System: One Year of Let's Go! Experience. A. Raux, D. Bohus, B. Langner, A. W Black and M. Eskenazi, *Interspeech 2006* Pittsburgh, USA.

Online Supervised Learning of Non-understanding Recovery Policies, D. Bohus, B. Langner, A. Raux, A. W Black, M. Eskenazi, and A. Rudnicky, *SLT-2006*, Palm Beach, Aruba.

Let's Go Public! Taking a Spoken Dialog System to the Real World. A. Raux, B. Langner, D. Bohus, A. W Black and M. Eskenazi, *Interspeech 2005*, Lisbon, Portugal.

Maximum Likelihood Adaptation of Semi-Continuous HMMs by Latent Variable Decomposition of State Distributions. A. Raux and R. Singh, *Interspeech 2004*, Jeju, Korea.

Automated Lexical Adaptation and Speaker Clustering based on Pronunciation Habits for Non-Native Speech Recognition. A. Raux, *Interspeech 2004*, Jeju, Korea.

Using Task-Oriented Spoken Dialog Systems for Language Learning: Potential, Practical Applications and Challenges. A. Raux and M. Eskenazi, *InSTIL 2004*, Venice, Italy.

Non-Native Users in the Let's Go!! Spoken Dialog System: Dealing with Linguistic Mismatch. A. Raux and M. Eskenazi, *HLT/NAACL 2004*, Boston, MA.

A Unit Selection Approach to F0 Modeling and Its Application to Emphasis. A. Raux and A. W Black, *ASRU 2003*, St Thomas, US Virgin Islands.

LET'S GO: Improving Spoken Dialog Systems for the Elderly and Non-natives. A. Raux, B. Langner, A. Black, and M. Eskenazi, *Eurospeech 2003*, Geneva, Switzerland.

Automatic intelligibility assessment and diagnosis of critical pronunciation errors for computer-assisted pronunciation learning. A. Raux and T. Kawahara, *ICSLP 2002*, Denver, Colorado.

Modeling and automatic detection of English sentence stress for computer-assisted English prosody learning system. K. Imoto, Y. Tsubota, A. Raux, T. Kawahara, and M. Dantsuji, *ICSLP 2002*, Denver, Colorado.

Optimizing computer-assisted pronunciation instruction by selecting relevant training topics. A. Raux and T. Kawahara. *InSTIL 2002 Advanced Workshop*, Davis, California.