Challenges in Spoken Language Translation

By: Ian Lane

October 19, 2010

Abstract:
Machine translation of spoken language presents additional challenges to those encountered when translating written documents. These include the segmentation of speech into appropriate units for translation, automatic generation of punctuation, appropriate handling of disfluencies and robustness against speech recognition errors. Additionally, as individual utterances are often ambiguous or semantically incomplete, environment, task and discourse context are crucial for the understanding and translation of spontaneous dialog.

In this talk I will present our recent works in spoken language translation. First, I will discuss the challenges of spoken language translation and describe how modern machine translation frameworks can be extended to handle speech input. I will then describe the additional issues that arise when developing deployable systems and introduce our semantic-class-based framework that enables such systems to remain effective in new deployment environments. Finally, I will discuss a number of remaining barriers that I believe must be overcome to realize effective speech translation, including the need for discourse and context models to generate functionally equivalent translations and improved approaches to handle disfluencies in spoken language.

About the speaker:
Ian Lane is a Research Assistant Professor at Carnegie Mellon University (CMU-SV, LTI). His research interests include speech recognition, spoken language understanding, machine learning and the application of these technologies. He has published extensively in these fields and has received several patents for his work. Since joining Carnegie Mellon University his research efforts have focused on robust spoken language translation, unsupervised adaptation and the development of fieldable speech-to-speech translation systems on mobile devices. During his time at CMU he has led the development of numerous speech translation systems including submissions to TransTAC, GALE, TC-STAR and IWSLT. A number of commercial products have also recently been developed incorporating his research findings. Before joining Carnegie Mellon University, Ian was an intern researcher at ATR Spoken Language Communication Laboratories in Kyoto, Japan. At ATR he developed novel approaches for task-adaptive speech recognition and out-of-domain detection for limited-domain spoken language systems. He obtained a Ph.D. degree from Kyoto University in 2006 and a B.Tech. degree in 2000 from Massey University, New Zealand.