

**COE Quarterly Technical Exchange**  
**Tuesday, September 9, 2008**

Stieff Building/810 Wyman Park Drive    Directions: <http://web.jhu.edu/HLTCOE/contact.html>  
12:00 Noon – 5:00 pm

Registration required: [sophies@jhu.edu](mailto:sophies@jhu.edu)

Time	Session
12:00-1:00	Lunch
1:00-1:30	Stream Characterization: Joint Exploitation of Externals and Content, Carey Priebe 1:20-1:30 – Discussion
1:30-2:00	Speech: Searching Speech with Out-of-Vocabulary Terms, Scott Olsson 1:50-2:00 – Discussion
2:00-2:30	Speech: A Parallelizable Language Model Rescoring Pipeline, Damianos Karakos 2:20-2:30- Discussion
2:30-3:00	Break
3:00-3:30	Speech: A Joint Language Model for Speech Recognition, Denis Filimonov 3:20-3:30 – Discussion
3:30-4:00	Text: Dependency Parsing by Belief Propagation, David Smith 3:50-4:00 – Discussion
4:00-4:15	Text: ACE Update, Jim Mayfield
4:15-4:45	Text: Multisource Biographic Fact Distillation, David Yarowsky 4:35-4:45 – Discussion
4:45-5:00	Wrap Up

## Abstracts

### **1:00-1:30: Joint Exploitation of Externals and Content, Carey Priebe**

We present theoretical and experimental progress for our ongoing investigation of joint exploitation of externals and content.

### **1:30-2:00: Searching Speech with Out-of-Vocabulary Terms, Scott Olsson**

We consider the problem of information retrieval in speech, when one or more of the query terms cannot be anticipated---that is, the word falls outside of a LVCSR system's fixed vocabulary. First, we will introduce several new methods for locating these out-of-vocabulary terms in continuous speech, e.g., by hypothesizing degradations of the term's pronunciation. Secondly, we will show how these vocabulary independent term detection results may be combined with retrieval results built on LVCSR.

### **2:00-2:30: A Parallelizable Language Model Rescoring Pipeline, Damianos Karakos**

Language model rescoring is the process in which a (usually large) language model is applied to the word graph generated by a speech recognizer or machine translation system. Its purpose is to re-weight the arcs of the graph using a large amount of information, possibly from a variety of sources; this amount is too large to incorporate directly into the decoding process. The talk will concentrate on N-gram language model rescoring using parallelizable finite-state methods, which scale gracefully with the amount of data. Results on a system combination task for speech translation will be presented.

### **3:00-3:30: A Joint Language Model for Speech Recognition, Denis Filimonov**

Abstract: We present a scalable joint language model which utilizes enhanced syntactic information generated by the Berkeley parser (latent variables). We discuss the challenges that such a model faces and our approaches to them. We also present preliminary results.

### **3:30-4:00: Dependency Parsing by Belief Propagation, David Smith**

Loopy belief propagation (BP) is a simple and effective tool for approximate inference in graphical models. In applying BP to dependency parsing with complex features, we can greatly speed up inference by calling a simpler parser as a subroutine. BP can be significantly faster than dynamic programming parsers at the cost of small amounts of search error. Loopy BP also allows us to train parsing models for non-projective languages with features that would make exact inference intractable. Finally, when projecting parses from one language to another, we can exploit the flexibility of the graphical model formalism to encode a second language and alignment information.

### **4:15-4:45: Multisource Biographic Fact Distillation, David Yarowsky**

We present a survey of our ongoing work in automatic fact distillation for cross-document co-reference resolution and information fusion, including novel structural, transitive, correlational and latent models of biographic features in text and conversational speech.