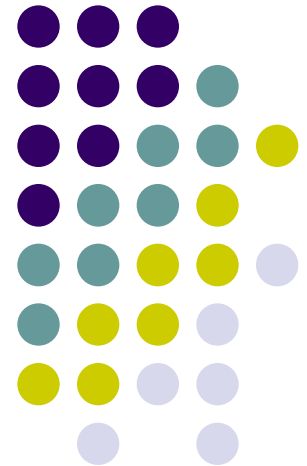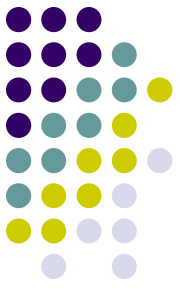# A Visual Interface for Browsing and Summarizing Conversations

Shama Rashid

CPSC 533C Project Update Presentation
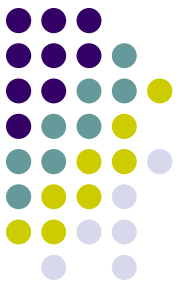
21st Nov 2011

Outline

- **Motivation**
  - **domain, task, and dataset**
- Current design and rationale
  - Implementation approach
  - Components of the interface
- Proposed extension
  - Implementation status

Domain?

- In our daily lives, we have conversations with people in many different modalities
  - Emails, meetings, telephone, videoconferencing, instant messaging, blogs, forums, etc.
  - **The Web** has significantly increased the volume and the complexity of **conversational data**
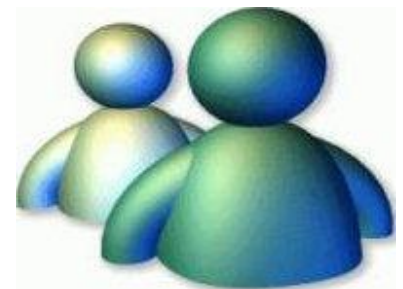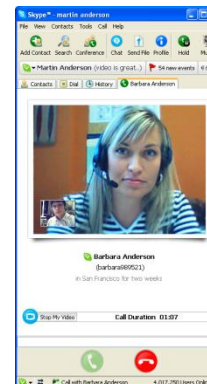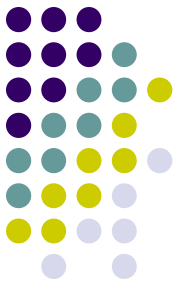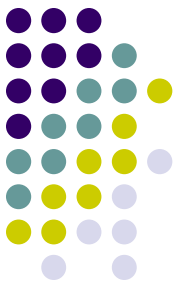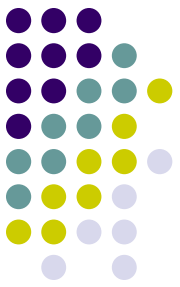
Task?

- High volume of conversational data being generated every day

- **Conversation summarization** can be beneficial by creating concise overviews

  - Expedite personal browsing of the data

  - Help preserve corporate memory

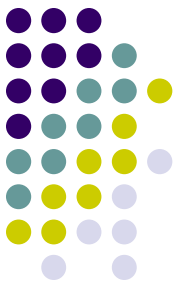# Possible Approaches

- Extractive summary
  - generated by selecting and concatenating the most informative sentences
  - ✓ dominant approach since simple binary classification
  - ✗ often unsatisfactory for users
- Abstractive summary
  - generated by extracting and aggregating information
  - ✗ requires a natural language generation component
  - ✓ preferred by users for coherency
  - ✗ lacks details

Visual Interface for Browsing and Summarizing Conversations

- Browse the conversation transcript
  - guided by an ontology which aggregates sentences according to
    - entities they mention
    - the speaker of the sentences
    - dialog acts i.e. whether they express a decision, problem, action item or subjectivity (positive or negative opinions)
- Generate summaries (either extractive or abstractive)
  - that can be tailored to concepts selected from the ontology
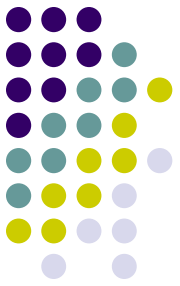
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Ontology Mapping Example

- A: Let's go with a *simple chip*.
  - **Speaker A**, who is the Project Manager
  - **Entities**: only one, *simple chip*
  - **Dialog Acts**: classified as *decision* and *positive-subj*

UTTERANCE		PARTICIPANT	ENTITY
		PROJECT-MANAG.	
Utterance5	*hasSpeaker*	Speaker A	simple chip
hasDAType	*hasDAType*	*hasEntity*	
decision		positive-subjective	

Dataset?

- Extensible to multi-modal conversations
  - AMI **meetings** [Carletta *et al* MLMI'05]
  - IBM **blog** discussions
  - BC3 **emails** [Ulrich *et al* AAAI EMAIL'08]
- Challenges:
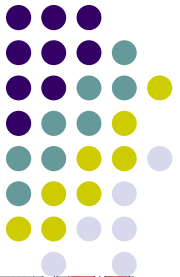 - Non-linear structure of emails

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Implementation Approach

- Python
  - Data parsing and formatting
  - Mapping to ontology concepts and relationships
- Java
  - Frontend interface
  - Abstractive summary generation

Interface for Browsing and Summarizing Conversations

Ontology View

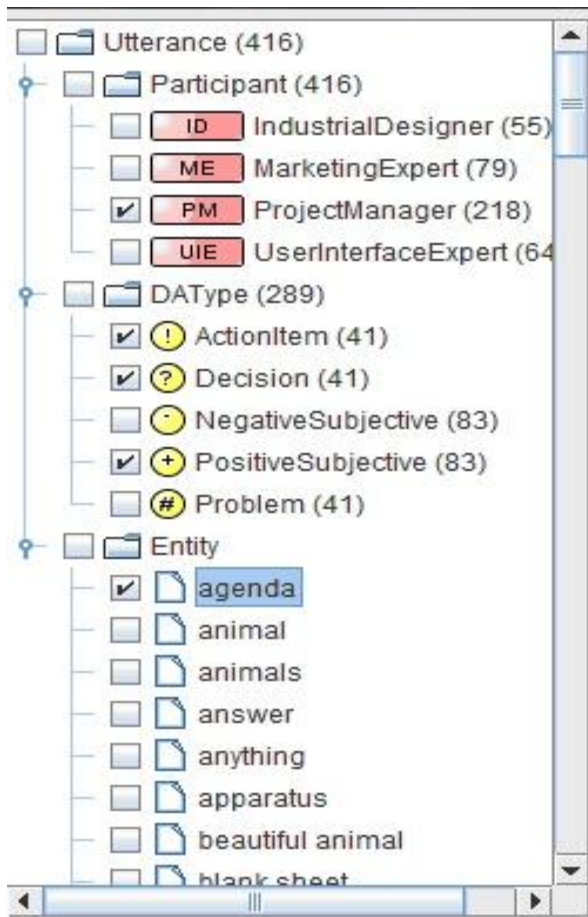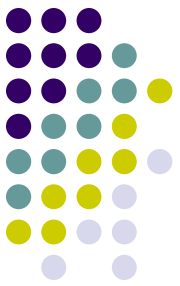

- Each node consists
  - a label
  - in parenthesis a count of sentences that can be mapped to it
  - an abbreviated string or icon representing the node
- Colored icons of different shapes as visual cues

Transcript View

Tags	Utterance
PM	Okay,
PM	good morning.
PM	This is our first team meeting.
⊕	Good day.
	Morning.
	Morning.
PM	I'll be your Project Manager for today, for this project.
PM	My name is Mark
PM !	will be giving this presentation for you to kick the project off.
PM	That's my uh
PM	that's the agenda for today.
PM	Well,
PM	of course we're new to each other,
PM ?	so I'd like to get acquainted first.
PM ?⊕	So let's do that first,
PM	I mean
PM ?	Let's start with you,
PM	can you introduce yourself?
PM !	You're our Marketing Expert.
	Yes.
	Um my name is Dirk, Dirk Meinfeld.
!	Um I will be uh Pr Project the Marketing Expert.
!	And I will see what the user wants
!	and uh what we can do uh with the new produ project product.
PM ⊕	Okay, excellent.
PM !	And you are User Interface
	Nick Broer,

- One sentences per row

- Turns indicated by containment

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Summary View

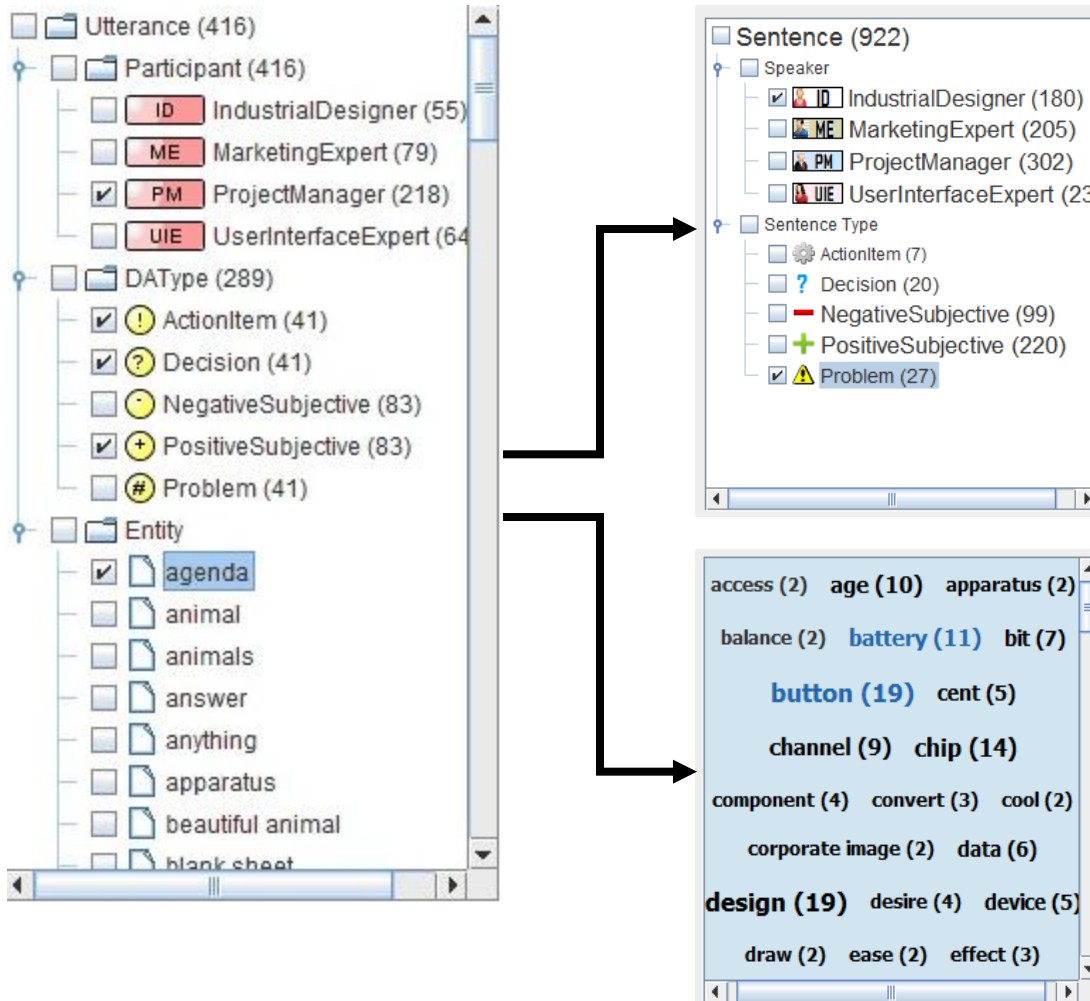|	
ProjectManager	So let's do that first ,
ProjectManager	I mean
ProjectManager	Let's start with you ,
ProjectManager	can you introduce yourself ?
ProjectManager	You're our Marketing Expert .
MarketingExpert	Um I will be uh Pr Project the Marketing Expert .
MarketingExpert	And I will see what the user wants
MarketingExpert	and uh what we can do uh with the new produ project product .
ProjectManager	Okay , excellent .
ProjectManager	And you are User Interface
UserInterfaceExpert	User Interface Designer .
ProjectManager	Yeah .
UserInterfaceExpert	I'm going to uh look at the technical design from the uh user point of view .
ProjectManager	Excellent . Okay .
IndustrialDesigner	I'm the Industrial Designer ,

• Filtered view of tagged sentences on the transcript view

• Linked with transcript view for further inspection of a particular sentence of interest
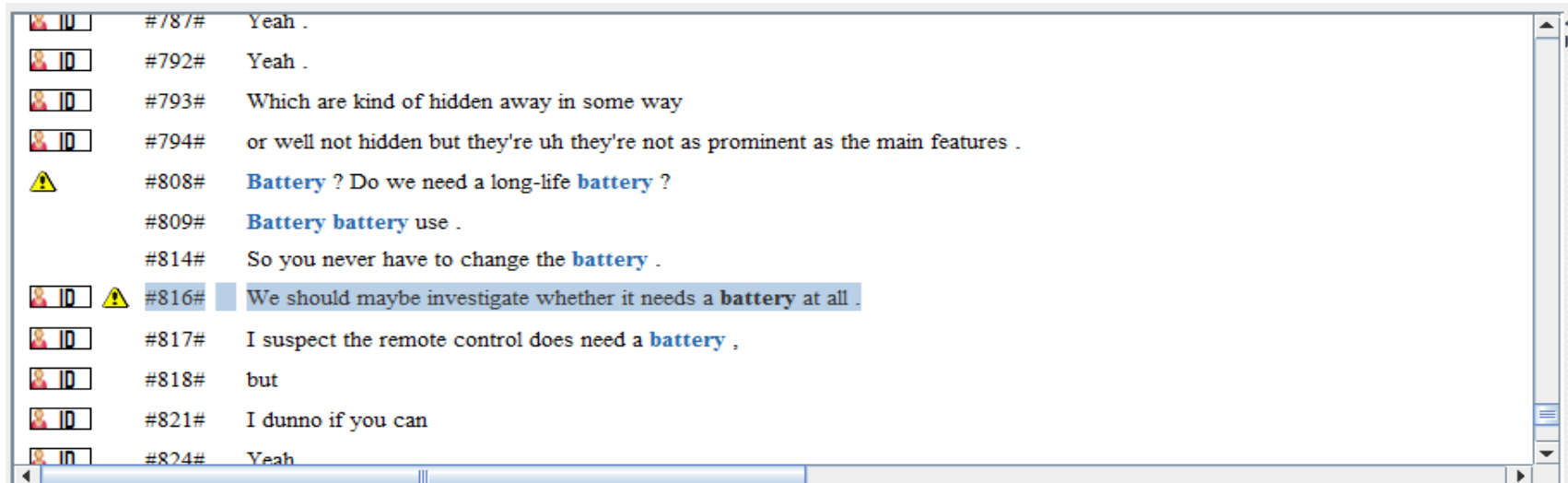
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Proposed Solution (1) : Better Representation of Ontology Concepts

- ✓ Remove technical jargon
- ✓ Scale font of labels according to count
- ✓ Separate entity from speaker and sentence Type
- ✓ Redesign icon
- ⧗ Range slider for entity view

Proposed Solution (2) : Information Scent for Summary View

Proposed Solution (3) : Marker Bar

⧖ Challenges:

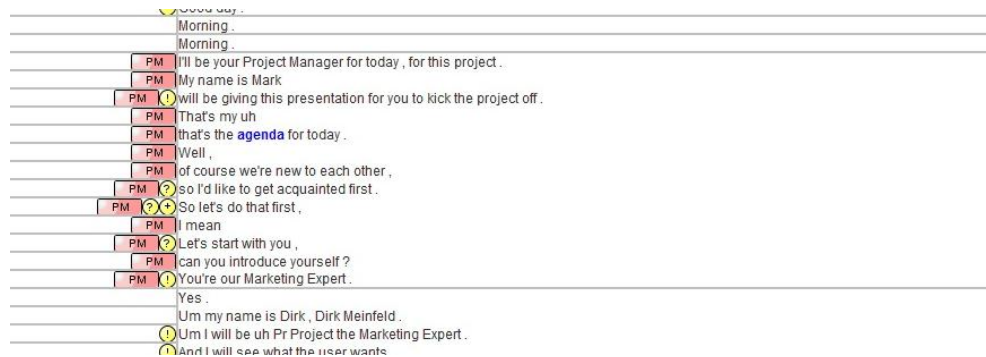- Multiple tags applied to a row

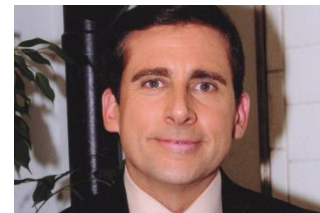# Proposed Solution (4): Others

✓ Flexibility for searching

⧗ Incorporate speaker as turn parameter

- Redesign speaker icons to be more semantically intuitive

Thank You

Questions?

References

J. Carletta, S. Ashby, S. Bourban, M. Flynn, M. Guillemot, T. Hain, J. Kadlec, V. Karaiskos, W. Kraaij, M. Kronenthal, G. Lathoud, M. Lincoln, A. Lisowska, I. McCowan, W. Post, D. Reidsma, and P. Wellner. The AMI meeting corpus: A pre-announcement. In Proc. of MLMI 2005, Edinburgh, UK, pages 28–39, 2005.

G. Murray, G. Carenini, and R. Ng. Generating abstracts of meeting conversations: A user study. In Proc. of INLG, Dublin, Ireland, 2010.

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