Pragmatics

Presentation by
Sudha Bhingardive (114050002)
Ramkrishna Bairi (114054 001)
Motivation

- Watch this video
Where does Pragmatic fit in?

- Increased complexity of processing
- Discourse and Coreference
  - Semantic Extraction
    - Parsing
    - Chunking
    - POS tagging
    - Morphology
What is pragmatic?

• “It is the study of speaker meaning”
  It is concerned with the study of meaning as communicated by speaker and interpreted by listener.

• “It is the study of contextual meaning”
  It involves interpretation of what people mean in a particular context and how the context influences what is said.

• “It is the study of how more gets communicated than is said”
  This type of study explores how great deal of what is unsaid is recognized as part of what is communicated.

• “It is the study of the expression of relative distance “
  On the assumption of how close and distant the listener is speakers determine how much needs to be said.
Syntax, Semantics and Pragmatics

• **Syntax:**
  Study of the relation between linguistic forms, how they are arranged in sequence, and which sequences are well-formed

• **Semantics:**
  Study of the relationship between linguistic forms and entries in the world

• **Pragmatic:**
  Study of relationships between linguistic forms and the users of those forms
Topics in Pragmatics

- Presupposition
- Implicature
- Reference
- Deixis
- Speech Acts
Presupposition

- **Presupposition** is something the speaker assumes to be the case prior to making an utterance.

- Example:
  
  “*Mary's brother bought three horses*”

Presuppositions:
1: Mary exists
2: She has a brother
3: She has only one brother
4: He has a lot of money
Presupposition Cont..

- It is the relationship between two proposition
- Uses symbol << to mean “presupposes”
- Example:
  A: Mary's dog is cute \((p)\)
  B: Mary has a dog \((q)\)
  C: \(p >> q\)

A: Mary's dog isn't cute (not \(p\))
B: Mary has a dog \((q)\)
C: not \(p >> q\)
## Types of Presupposition

<table>
<thead>
<tr>
<th>Type</th>
<th>Example</th>
<th>Presupposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existential</td>
<td>The dog</td>
<td>&gt;&gt; dog exists</td>
</tr>
<tr>
<td></td>
<td>Your car</td>
<td>&gt;&gt; You have a car</td>
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<tr>
<td>Factive</td>
<td>She didn’t realize he was ill</td>
<td>&gt;&gt; He was ill</td>
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<tr>
<td></td>
<td>I am glad that it’s over</td>
<td>&gt;&gt; It’s over</td>
</tr>
<tr>
<td>Non-factive</td>
<td>I dreamed that I was rich</td>
<td>&gt;&gt; I was not rich</td>
</tr>
<tr>
<td></td>
<td>He pretended to be happy</td>
<td>&gt;&gt; He wasn't happy</td>
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<tr>
<td>Lexical</td>
<td>He was smoking</td>
<td>&gt;&gt; He used to smoke</td>
</tr>
<tr>
<td></td>
<td>He managed to escape</td>
<td>&gt;&gt; He tried to escape</td>
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<tr>
<td>Structural</td>
<td>When did she leave?</td>
<td>&gt;&gt; She left</td>
</tr>
<tr>
<td></td>
<td>Where did you buy the bike?</td>
<td>&gt;&gt; You bought the bike</td>
</tr>
<tr>
<td>Counterfactual</td>
<td>If you were my friend you would have help me</td>
<td>&gt;&gt; You are not my friend</td>
</tr>
<tr>
<td></td>
<td>If I weren't ill I would have gone to school</td>
<td>&gt;&gt; I am ill</td>
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</tbody>
</table>
Conversational Implicature

- **Implicature**: It means more being communicated than is said

- **Conversational implicature**: a meaning or message that is implicated in a conversation

- When people oversay (or say more of) or undersay (say less of) something, they produce certain extra meaning or meanings beyond the literal meanings of words and sentences. This extra meaning is conversationally dependent, hence conversation implicature.
Conversational Implicature contd..

- An implicature may also be seen as an indirect way of expressing oneself.

Example 1:

A: Where is the fish?
B: The cat looks very happy.

Example 2:

A: Did you invite John and Mary?
B: I invited John

Example 3:

A: Coming to the wild party tonight?
B: My parents are visiting.
Reference

- Reference is thought as an act in which a speaker, or writer, uses linguistic forms to enable a listener, or reader, to identify something.

- Can I borrow your Shakespeare?
- Yeah, it’s over there on the table
  - Context: One student ask another
  - Intended referent and inferred referent is not a person, probably a book

- Where’s the cheese sandwich sitting?
- He’s over there by the window.
  - Context: In a restaurant, one waiter brings the order of food another waiter and asks him
  - Referent is person, not the thing

- Brazil wins World Cup
- Japan wins first round of trade talks
  - Context: News paper headlines
  - Referent in first one is soccer team, not government
  - Referent in second one is government, not the soccer team

- Words themselves don’t refer to anything, people refer.
- Anaphoric reference & Cataphoric reference
Deixis

• ‘Pointing’ via language

• Eg: What’s that?
  • Context: Hearing a loud sound
  • ‘this’ is deictic expression

• Eg: I will put this here
  • Not much sense without the context

• Types:
  • Person deictic
    • me, you, I, he, she, it
  • Spatial deictic
    • here, there
    • I am not here now
    • Makes sense if the context is telephone recording
  • Temporal deictic
    • now, then
    • Back in an hour
Speech Acts

- Performing actions via utterances
- The boss utters “You are fired”
- Performs an act of ending the employment
- Speech acts can be
  - Command, apology, complaint, compliment, invitation, promise, request etc.
- “The tea is really cold!”
  - Complaint during winter
  - Compliment during summer
Speech Act (contd...)

- Illocutionary act
  - Basic act of utterance

- Illocutionary force
  - We utter to make statement, request, warning etc
  - “I will see you later”

- Illocutionary forces
  - Prediction
  - Promise
  - Warning

- Perlocutionary effect
  - Effect on the hearer
  - “Is there a salt bottle there?”
    - During dinner, the hearer will pass on the salt bottle.
Pragmatics in QA/Information Extraction

- More precise answers can be generated
- Not much research work done
- “Question Answering System of Confucian Analects based on Pragmatics Information and Categories”
  - Paper by Ye Yang, Song Liu, Shingo K, Fuji Ren
  - Extracting pragmatic info based on paragraph acts
    - Meaning of paragraph at the level of illocutionary forces
  - Template based extraction
  - Machine learning techniques to extract some categories automatically
Pragmatics in QA/Information Extraction

- **Domain**: “"The Analects of Confucius”
  - dialogue and quotation style
  - records the statements and actions of Confucius and his disciples
  - embodies the political stance, ethics ideas, morale, and education principle of Confucius

- **Technique**
- Classified the documents into categories
  - 12 categories (eg: Humanity, Politics, etc.)
  - Each category characterized by certain keywords
- **Extracted Pragmatics**
  - Using annotated documents
  - Manual; via different views expressed in questionnaire
<table>
<thead>
<tr>
<th>Chapter number</th>
<th>Pragmatics Information</th>
<th>Confucian Analects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td>Take the study as a pleasure; make the study and the practice united...</td>
<td>Confucius said, &quot;To learn and practice what is learned time and again is pleasure, is it not? To have friends come from afar is happiness, is it not? To be unperturbed when not appreciated by others is gentlemanly, is it not?</td>
</tr>
<tr>
<td>1-2</td>
<td>The respect for elderly and care for children is the basic manner...</td>
<td>Yu Tzu said, &quot;It is seldom that a man of filial piety and brotherly love would be inclined to offend those above. There has not been a man inclined to cause disorder without the inclination to offend those above. The gentleman nourishes the roots. With roots established, the way grows. Are filial piety and brotherly love not the roots of benevolence?&quot;</td>
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Pragmatics in QA/Information Extraction

[Diagram showing a flowchart of the process, with nodes labeled Input, Question Analysis, Question Classification, Keyword Extraction, Full-text of Analogies, Similarity Calculation, and Answers Ranking.]

[Bar charts showing Precision and Recall for different categories: SE, C, P, M, O.]

Pragmatics Information

Full-text
Exercise

• Morning you hello bring go
  • Syntax: ✗
  • Semantic: ✗
  • Pragmatic: ✗

• Go
  • Syntax: ✗
  • Semantic: ✗
  • Pragmatic: ✓

• Earth is 8th planet from Sun in our solar system
  • Syntax: ✓
  • Semantic: ✗
  • Pragmatic: ✓ / ✗

• The tree walked and talked to me
  • Syntax: ✓
  • Semantic: ✗
  • Pragmatic: ✓ / ✗

• I am vegetarian
  • Syntax: ✓
  • Semantic: ✓
  • Pragmatic: ✓ / ✗
Conclusion

- Human mind is extremely creative
- Languages are very powerful
- This can lead to very many contexts, situations and interpretations
- Proper understanding of the context is needed to appropriately communicate and understand thoughts
- Pragmatics play an important role here

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References