Dialogue Act Tagging Process for Sanwada

## Dialogue Act Recognition Steps

1. Implement a dialogue act recognition system to consists in defining the set of DAs labels that is relevant for the task.
2. Then, Informative features have to be computed from the speech signal and DA models are trained on these features.
3. The segmentation of the dialogue into utterances may be carried out independently from DA recognition, or alternatively realized during the recognition step with joint DA recognition step with joint DA recognition and segmentation models.

## Dialogue Act Tag-set Selection Criteria

1. the DA labels should be generic enough to be useful for different tasks, or at least robust to the unpredictable variability and evolution of the target application. [ Need to be Generic]
2. the DA labels must be specific enough to encode detailed and exploitable characteristics of the target task. [ Need to be Specific]
3. the DA labels must be clear and easily separable, in order to maximize the agreement between human labelers. [Need to be Separable]

## Most Popular Tag Sets

* Dialogue Act Markup in Several Layers (DAMSL) - [220 tags - Conversational dialogue type ]
* The Switchboard SWBD-DAMSL [220 tag elements, 42 tag classes-Conversational dialogue type ]
* The Meeting Recorder [50 tags - Task Oriented dialogue type]
* The VERBMOBIL [46 tags - Task Oriented dialogue type]
* The Map-Task [12 tags - Task Oriented dialogue type]

**Refereed Research papers and tags**

|  |  |  |
| --- | --- | --- |
| Research Paper | Tags | Selected/ Not Selected |
| Dialogue act modeling for automatic tagging and recognition of conversational speech [ Andreas Stockle-2000] | Statement  Backchannel/AckNowledge  Opinion  Abandon  Agreement/Accept  Appreciation  Yes/No Question  Non verbal  Yes Answers  Conventional Closing  WH Questions  No Answers  Response AckNowledgement  Hedge  Declarative Yes/No Question  No Answer  Back Channel Question  Quotation  Summarize  Affirmative Yes/No Answers  Action Directive  Collaborative Compilation  Repeat Phrase  Open Question  Rhetorical Question  Hold Before Answer/ Agreement  Reject  Negative Non No Answers  Signal Non Understanding  Other Answers  Conventional Opening  Or Clause  Dispreferred Answers  3rd party Talk  Offers Options and Commits  Self-Talk  Downplayer    Maybe / Accept Part  Tag Question  Declarative WH Question  Apology  Thanking | Yes  Yes  Yes  Yes  No  No  Yes  No  Yes  Yes  No  Yes  No  No  No  Yes  No  No  No  No  No  No  No  Yes  No  No  No  Yes  No  No  No  Yes  No  No  No  No  No  No  No  No  No  Yes  Yes |
| Classifying Dialogue Acts in One-on-One Live Chats[Su Nam Kim-2000] | Conventional Closing  Conventional Opening  Downplayer  Expressive  No Answer  Open Question  Request  Response ACK  Statement  Thanks  Yes Answer  Yes/No Question | Yes  Yes  No  Yes  Yes  Yes  Yes  No  Yes  Yes  Yes  Yes |
| Dialogue Act Classification Based on Intra-Utterance Features[Nick Webb-2000] - SWITCHBOARD Dialogue Acts(42 tag Classes) | Statement-Non -Option  AckNowledge  Statement-opinion  Agree/Accept  Abandoned  Appreciation  Yes-No-question  Non-verbal  Yes answers  Conventional-Closing  Uninterpretable  WH-Question  No Answers  Response AckNowledgement  Hedge  Declarative Yes-No-Question  Other  Backchannel in Question Form  Quotation  Summarise/Reformulate  Affirmative Non-Yes Answers  Action-Directive  Collaborative Completion  Repeat-Phrase  Open-Question  Rhetorical-Questions  Hold Before Answer  Reject  Negative Non-No answers  Signal-Non-Understanding  Other Answers  Conventional-Opening  Or-Clause  Dispreferred Answers  3rd-Party-Talk  Offers, Options Commits  Self-Talk  Downplayer  Maybe/ Accept-par  Tag-question  Declarative wh-Question  Apology | No  Yes  Yes  No  Yes  No  Yes  No  Yes  Yes  Yes  No  Yes  No  No  Yes  Yes  No  No  No  No  No  No  No  Yes  No  No  Yes  No  No  No  Yes  No  No  No  No  No  No  No  No  No  Yes |
| Automatic Instant Messaging Dialog using statistical model and dialog acts- [Edward Ivonic-2008] | Statement  Thanking  Yes No Question  Response Ack  Request  Open Request  Yes Answers  Conventional closing  No Answers  Conventional opening  Expressive  Downplayer | Yes  Yes  Yes  No  Yes  No  Yes  Yes  Yes  Yes  Yes  No |
| Text Based Dialogue Act Classification for Multiparty Meetings. [Matthias Shirberg - 2006] | Statements  Questions  Backchannels  Floor-grabbers  Disruptions | Yes  Yes  Yes  No  No |
| Lexical and Discourse Analysis of Online Chat Dialog -  [Eric N. Forsyth and Craig H. Martell- 2007 ] | Statement  System  Greet  Emotion  WH-Question  Yes-No Question  Continuer  Accept  Reject  Bye  Yes answer  No answer  Emphasis  Other  Clarify | Yes  No  No  No  No  Yes  No  No  Yes  No  Yes  Yes  No  Yes  No |
| Combinations of Classifiers for Automatic Recognition of Dialogue acts[ Pavel Kral-2005] | Statements  Orders  Yes/No Questions  Other Questions | Yes  No  Yes  No |
| Lexical, Prosodic, and Syntactic Cues for Dialogue Acts [ Daniel Jurafsky - 1997] | Statement  Continuer  Opinion  Agree / Accept  Abandon / Turn-Exit  Appreciation  Yes-No Question  Non-Verbal  Yes ANswers  Conventional Closing  Uninterpretable  WH-Questions  No-ANswer  Response - ACK  Hendge  Declarative Question  Other  Backchannel Question | Yes  No  No  No  Yes  No  Yes  No  Yes  Yes  Yes  No  Yes  No  No  No  Yes  No |

## Horizontal tag set analysis of popular research papers relevant to the context

## 1. Dialogue act modeling for automatic tagging and recognition of conversational speech [ Andreas Stockle-2000]

2. Classifying Dialogue Acts in One-on-One Live Chats[Su Nam Kim-2000]

3. Dialogue Act Classification Based on Intra-Utterance Features[Nick Webb-2000] - SWITCHBOARD Dialogue Acts(42 tag Classes)

4. Automatic Instant Messaging Dialog using statistical model and dialog acts- [Edward Ivonic-2008]

5. Text Based Dialogue Act Classification for Multiparty Meetings. [Matthias Shirberg - 2006]

6. Lexical and Discourse Analysis of Online Chat Dialog - [Eric N. Forsyth and Craig H. Martell- 2007 ]

7. Combinations of Classifiers for Automatic Recognition of Dialogue acts[ Pavel Kral-2005]

8. Lexical, Prosodic, and Syntactic Cues for Dialogue Acts [ Daniel Jurafsky - 1997]

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tags** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **Sum** |
| Statement | X | X | X | X | X | X | X | X | 8 |
| Backchannel/ Ack | X | X | X | X | X |  |  | X | 6 |
| Opinion |  |  | X |  |  |  |  | X | 2 |
| Abandoned/Uninterpretable | X |  | X |  | X |  |  | X | 4 |
| Yes-No Question | X | X | X | X |  | X | X | X | 7 |
| Yes answers | X | X | X | X |  | X |  | X | 6 |
| Con. Closing | X | X | X | X |  | X |  | X | 6 |
| Expressive/emotion |  | X |  | X |  | X | X |  | 4 |
| Open question | X | X | X | X | X |  |  | X | 6 |
| Reject | X |  | X |  |  | X |  |  | 3 |
| Apology | X |  | X |  |  |  |  |  | 2 |
| Thanking | X | X |  | X |  |  |  |  | 3 |
| Con. Opening | X | X | X | X |  |  |  |  | 4 |
| Other | X |  | X |  |  | X |  | X | 4 |
| No answer | X | X | X | X |  | X |  | X | 5 |
| Request |  | X |  | X |  |  |  |  | 2 |
| Command / Order |  |  |  |  |  |  | X |  | 1 |
| Self talk | X |  | X |  |  |  |  |  | 2 |
| Backchannel question | X |  | X |  |  |  |  | X | 2 |
| Downplayer |  | X | X | X |  |  |  |  | 3 |
| Accept |  |  | X |  |  | X |  | X | 3 |
| Appreciation |  |  | X |  |  |  |  | X | 2 |
| Non verbal |  |  | X |  |  |  |  | X | 2 |
| wh-question |  |  | X |  |  | X | X | X | 4 |
| Greet |  |  |  |  |  | X |  |  | 1 |
| Emphasis |  |  |  |  |  | X |  |  | 1 |
| Clarify |  |  |  |  |  | X |  |  | 1 |
| Hedge | X |  | X |  |  |  |  | X | 3 |
| Continuer |  |  |  |  |  | X |  | X | 2 |

## Principal Dimensions of Dialog Acts

* Information level - Task, Task management, communication management
* Statement - Assert, commit, explanation, expression
* Conventional - opening, closing
* Influence on Listener - request, action directive, offer, open option
* Agreement- accept, reject, accept part, reject part, may be
* Answers - yes answers, no answers, declarative answers
* Understanding - back channel, completion, correction, non-understanding, repeat - rephrase
* Communicative status - abandoned,interrupted, self talk

## Selected Tag Set for Sanwada Corpus

1. Statement -
2. Backchannel/ Acknowledge - e.g : uh-huh
3. Opinion - e.g : I think it's great
4. Abandoned/Uninterpretable - e.g: so
5. Yes-No Question
6. Yes Answers
7. Conventional Closing - various ways of ending conversation - bye bye
8. Expressive - an acknowledgement of a previous utterance or an indication of the speakers mood. - wow, haha,
9. Open Question - general question(cannot be answered by yes or no)
10. Reject - Rejection
11. Apology
12. Thanking
13. Conventional Opening - greeting and other ways of starting conversation - hello
14. Other -
15. No Answer - answering no - no, nope etc
16. Request - asking something to do.

## Requires Consideration About Including Following Tags

1. Command/Order

* උඹ උන් එක්ක කාපන්!
* නැවතියන්!
* මෙහෙට වරෙන්!

1. Self-Talk
2. Backchannel Question

## Controversial Tags

1. Are Command/Order and Request need to be in under one tag category ?

i.e Command/Order/Request

* ඔයා එයාට උදව් කරන්න!

## Finalized Tag set

1. Statement
2. Backchannel/ Acknowledge - e.g : uh-huh
3. Opinion - e.g : I think it's great
4. Abandoned/Uninterpretable/Other - e.g: so
5. Yes-No Question
6. Yes Answers
7. Conventional Closing - various ways of ending conversation - bye bye
8. Expressive - an acknowledgement of a previous utterance or an indication of the speakers mood. - wow, haha,
9. Open Question - general question(cannot be answered by yes or no)
10. Reject - Rejection
11. Apology
12. Thanking
13. Conventional Opening - greeting and other ways of starting conversation - hello
14. No Answer - answering no - no, nope etc
15. Request/Order/Command - asking something to do.
16. Backchannel Question