

Dialogue Data Evaluation

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Data Preparation

This R Markdown serves the purpose of evaluating acquired dialogue data. The collected data represents several linguistic dialogue features.

##	Feature	HH1	HH2	HH3	HC1	HC2	HC3
## 1	Utterance Length	52.558	55.209	73.681	33.372	22.452	38.393
## 2	Words per Utterance	13.767	15.478	20.931	8.721	5.710	9.714
## 3	Unique words per Utterance	12.093	11.791	17.056	8.093	5.613	8.857
## 4	Lexical Diversity	9.287	11.006	9.816	9.618	6.915	8.277

Divided Dialogues:

To compare human-human data with human-robot data, the dataframe has to be split into two:

##	Feature	HH1	HH2	HH3
## 1	Utterance Length	52.558	55.209	73.681
## 2	Words per Utterance	13.767	15.478	20.931
## 3	Unique words per Utterance	12.093	11.791	17.056
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Human-Human Dialogue Data

Count the mean value for each linguistic feature data:

##	Feature	HH1	HH2	HH3	Mean
## 1	Utterance Length	52.558	55.209	73.681	60.48267
## 2	Words per Utterance	13.767	15.478	20.931	16.72533
## 3	Unique words per Utterance	12.093	11.791	17.056	13.64667
## 4	Lexical Diversity	9.287	11.006	9.816	10.03633

Human-Robot Diaogue Data

Count the mean value for each linguistic feature data:

##	Feature	HC1	HC2	HC3	Mean
## 1	Utterance Length	33.372	22.452	38.393	31.405667
## 2	Words per Utterance	8.721	5.710	9.714	8.048333
## 3	Unique words per Utterance	8.093	5.613	8.857	7.521000
## 4	Lexical Diversity	9.618	6.915	8.277	8.270000

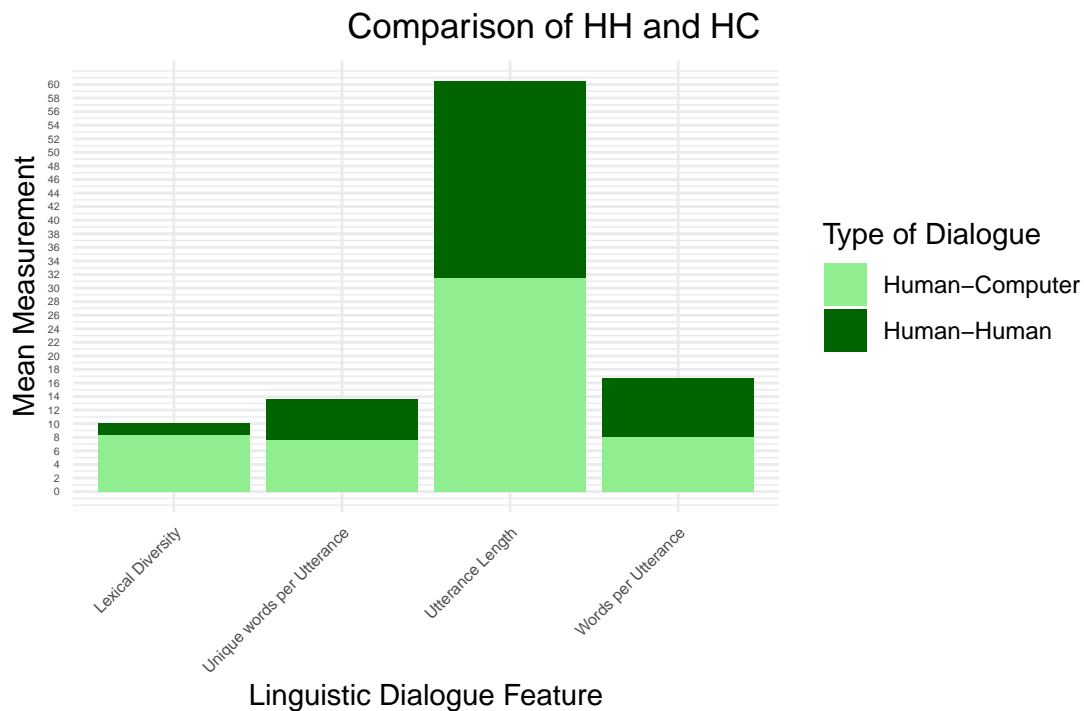
Combined Mean Values

Combine mean values from both Data Frames

dialogue_summary

##	Feature	HH	HC
## 1	Utterance Length	60.48267	31.405667
## 2	Words per Utterance	16.72533	8.048333
## 3	Unique words per Utterance	13.64667	7.521000
## 4	Lexical Diversity	10.03633	8.270000

Visual Comparison



Statistical Relevance

Since we have two different types of Dialogues, the Two-sample independent t-test is applied:

First application: Utterance lengths compared

```
##
## Welch Two Sample t-test
##
## data: group_1_Utterance and group_2_Utterance
## t = 3.5716, df = 3.6033, p-value = 0.02778
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  5.457557 52.696443
## sample estimates:
## mean of x mean of y
##  60.48267  31.40567
```

Second application: Average words compared

```
##
## Welch Two Sample t-test
##
## data: group_1_word and group_2_word
## t = 3.5089, df = 3.133, p-value = 0.03662
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  0.9929812 16.3610188
## sample estimates:
## mean of x mean of y
## 16.725333  8.048333
```

Third application: Average unique words compared

```
##
## Welch Two Sample t-test
##
## data: group_1_unique_word and group_2_unique_word
## t = 3.1129, df = 3.1877, p-value = 0.04863
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  0.0667547 12.1845786
## sample estimates:
## mean of x mean of y
## 13.64667  7.52100
```

Fourth application: Lexical Diversity

```
##
## Welch Two Sample t-test
##
## data: group_1_lex and group_2_lex
## t = 1.8967, df = 3.4384, p-value = 0.1423
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
```

```
## -0.9946258 4.5272924
## sample estimates:
## mean of x mean of y
## 10.03633 8.27000
```