Good proposal, with a lot of potential for novelty, though it would have been better with a bit more details for each required item to describe.

LiarGameBot: Can Computer Detect Liar?

Geonho Koh
School of Computing, KAIST
ghkoh97@kaist.ac.kr

Hyeonbin Hwang
School of Computing, KAIST
hbin0701@kaist.ac.kr

Form: 16/20, Substance: 7/10, Novelty: 3/4, Relevance: 5/6 (31/40)

Abstract

In this NLP project, we introduce ~~you to~~ **LiarGameBot**, which effectively provides an environment to play Liar Game alone, utilizing word association data from SAT, ACT, wordassociation.org, and actual game log files. We also introduce algorithms to extract key words from sentences, evaluate word association score with syntagmatic and paradigmatic relations, and generate sentences.

1 Introduction

Liar Game, first introduced in a Korean TV show, has been gradually gaining public attention, and expanding its influence even in mobile market. However, this game requires multiple players to play, which resulted in low accessibility and limited user base. Now, to enrich user experience and complement for the diminishing users, we have developed **LiarGameBot**, which is able to replace human players, and further generate an accurate probabilistic ~~model of~~ the winner in this game. Not only this contribution will be limited to Liar Games, but also with popularization of this game, will form a huge dataset of game logs, helping various NLP researches involving word association and human psychology to advance.

2 Data

We will be utilizing the reading passages from SAT and ACT practice tests, and wordassociation.org in calculating the word association score. In verifying our model, we would be utilizing our own collected offline and online game logs of 30 liar games.

3 Method and Algorithm

Liar game is a game in which players identify the 'liar' when describing a given word. 'Liar' who does not know the given word will act as if he knows it, and other players should not provide too specific of a description so that liar cannot predict the given word.

3.1 Game Strategy

LiarGameBot should consider different strategies depending on the role it is assigned to. When assigned liar, it should strive for inferring the given word through the description of other players, and to generate descriptions that would help hide its identity. Otherwise, when assigned civilian, it will infer who the liar is through the description of each player, and at the same time, generate description that would prevent the liar from guessing the given word.

3.2 Algorithm Required

Extracting key words or phrases in description sentence will be crucial, with which we would calculate the word association in respect to the list of candidate words. We will use paradigmatic and syntagmatic approaches to assign the level of association. Then, we would need an algorithm in generating a short sentence through the extracted keywords. Besides this, we introduce three novel ideas: liar score, liar keyword, and player keyword. When the bot is assigned civilian, it will calculate liar score of every player, which increases when description's association score with the given word is minus or the word is too generous. Also, with its assigned role, bot will respectively extract liar and civilian keyword, considering the strategies discussed previously, including redundancy, vagueness, etc.

References

Reinhard Rapp. 2002. *The Computation of Word Associations: Comparing Syntagmatic and Paradigmatic Approaches* University of Mainz, FASK.