Vocabulary Builder

Overview

Vocabulary builder is a game that helps a person learn new words in a fun way. The main objective of the game is to guess a word correctly in the least no. of attempts.

Specifications

Vocabulary builder is a variation of a game popularly known as Cows & Bulls.

Language used: Python

Areas of study: Machine Learning, Natural Language Processing

Game Strategy

- ❖ The player will be asked to guess a word of a specific length(The word should exist in the english language).
- ❖ The player's input will be given an answer of the no. of whites and blacks.
  - ➢ White -A letter in is the word to be guessed and is also in the right place.
  - ➢ Black -A letter is there in the word but is not in the right place.
- ❖ The strategy is to guess new words depending upon the previous guesses.
- ❖ Thus the word you guess will either be the right word or will give you possible candidates for the letters in the word to be guessed
- ❖ The player should try to guess the word in the least no. of attempts.
- ❖ Once the word has been guessed, the meaning, the synonyms, the antonyms and the usage of the word with an example is given.

Game Development Strategy:

- ❖ A random word of medium difficulty is selected from a database.
- ❖ The player is asked to guess the word, at each attempt, the player is given the no. of white and no. of blacks.
- ❖ The no. of attempts taken by the player is calculated.

❖ A score is given to the user depending upon the no. of attempts and the difficulty of the word.
❖ The game uses dynamic difficulty implemented using the concepts of Machine Learning and Natural Language Processing.

Adaptive/Dynamic difficulty Implementation:

❖ The game uses two different databases - Known database and Unknown Database.
❖ The Unknown database is used to select a word for guessing.
❖ The known database contains the words that the player has input.
❖ The difficulty of the word is decided upon its frequency of use and the no. of syllables in the word(uses Natural Language Processing).
❖ The word for the next level is chosen depending upon the no. of attempts taken by the player, that is if the player takes lesser attempts than a set value the the difficulty of the next word increases but if the player takes more no. of attempts then the difficulty of the word is reduced(uses Machine Learning).

Tools/Resources Required

❖ PyCharm- Python IDE
❖ Natural Language Toolkit
❖ WordNet database (developed by Princeton University)
❖ Weka
❖ Pandas