

Abstract

Applying AI to the computer that can perform the calculations faster than a human can make a game becomes more challenging and not boring. One of the great platform to test the techniques of AI in the game is Scrabble^[11].

Scrabble is a board game in which two to four players form a words from the seven letters that give on them that placed on a board that has a large 15x15 square. These games have been sold in 121 countries throughout the world and more than 100 million sets of the game have been sold^{[12][13]}, in the U.S. every three homes has a set of these games^[12]. Implement of AI in Scrabble is a bit different than some other games, AI techniques are successfully applied to some deterministic games like chess, checkers, reversion, login or register, hex, go, renju, Amazons, pente, and others are not suitable to be applied at Scrabble^[11].

Scrabble AI that always chooses words with the highest value of the possible words that can be arranged at every turn will very easily be defeated by a human expert in the Scrabble^[11]. This game is designed for humans to fight the AI which is not easily defeated, so the game becomes more interesting and challenging. Therefore designed a strategy game so that people can not easily succumb's AI system. AI system will evaluate the selection of words that will be played in each turn in which each word choice will affect both the game board and the possible options next turn. In this report, to establish a data dictionary to store all the valid words using a dawg algorithms, dawg algorithm can reduce the storage space and help to retrieve words that will be played in addition analyzed three strategy game that is formed, by comparing the three strategies in 60 attempts to see the performance of each strategy.

Based on trials that have been done, a strategy game of Scrabble that each step is only based on the score of words that have formed only 40% winning percentage against the strategy game of Scrabble that has the word selection evaluation.

Key words: Scrabble, directed acyclic word graph algorithm