CS 461 – ARTIFICIAL INTELLIGENCE

Term Project Proposal

Group Nick

TERRA

Members

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Project Description

In this project, we'll write a program called TERRA. We'll use the Python programming language. Our program will input the clues of a 5x5 New York Times mini-puzzle (by Joel Fagliano, see this link https://www.nytimes.com/crosswords/game/mini) and its official solution. TERRA will be an artificial intelligence software that will try to come up with a solution to the aforementioned puzzle. The program is going to download the clues, official solution, and the geometry of the puzzle. Then the program is going to try to find the answers by using an AI-based software to process the downloaded clues. After the program finishes solving the puzzle, it will compare its answers with the official solution.

Literature

OUR REVIEW: The authors of the article approach solving crossword puzzles as a computational problem and offer a solution by using the backtracking algorithm. This algorithm produces possible solutions to the puzzle in the form of a solution tree where the tree is explored using the Depth First Search algorithm until a valid solution is found. First, a row is chosen and filled with one of the possible answers which have the same length. The program continues filling the rows with possible answers until the puzzle is solved or until there is no possible answer left (where backtracking begins). Backtracking deletes the last word entered in a row, then replaces the row with another word. These steps carry out recursively until a solution is found or until all the possible solutions are tried.

OUR RESOURCE: Nurdin, et al. "The Implementation of Backtracking Algorithm on Crossword Puzzle Games Based on Android." *Journal of Physics: Conference Series*, vol. 1363, no. 1, 2019, pp. 1-6,https://iopscience.iop.org/article/10.1088/1742-6596/1363/1/012075/pdf. Accessed 25 Sep. 2020.

The Implementation of Backtracking Algorithm on Crossword Puzzle Games Based on Android

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Abstract. The development of smartphones at this time is improving very fast and rapidly can affects to the renewal of all applications in the smartphone. At this time we can do anything with a smartphone in hand. In other hand smartphone also can reduce the saturation and boredom of many games made for smartphones. One of example is the crossword game application. Filling or playing crossword puzzles turns out many benefits, in addition to increasing the freshness of the mind from routine activities, this game can also add to our insight in various things, such as vocabulary, various important terms and popular words we often find in filling out cross-breeding. The backtracking algorithm is used to determine the exact steps to be taken in completing the crossword puzzle game. By using the backtracking algorithm, it is can expected the completion of the crossword puzzle game so this game can be more easily to solved. The system is built using Java with the ADT IDE for Eclipse as a programming language. The result of this final project is an application of a crossword puzzle game about the term computer and informatics that can give correct answers automatically.

1. Introduction

The development of smartphones is currently growing very fast and fast. There are many of the advanced technologies offered on smartphones always change quickly and are updated to the latest technology. One of the latest smartphone technologies is the Android-based operating system. This operating system is open source intended for users to be able to create their own applications in accordance with the desires [1].

Image 1: First page of the source