

Universiti Teknologi MARA

Development of Sudoku Puzzle Using
Genetic Algorithm

Muhamad Fadzil Bin Mahadzir

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ABSTRACT

The purpose of this study is to apply Genetic Algorithms in Sudoku puzzles. Sudoku is a Japanese number puzzle game that has become a worldwide phenomenon and has recently gained considerable popularity. The puzzle involves completing a grid of cells by assigning a single number to each cell. The numbers in a row or a column must consist of any one of the numbers from 1 to 9; no repetition is allowed. The objective of this paper is to apply genetic algorithms to complete two tasks. First, a GA will be used to generate the correct solution of Sudoku puzzles. The mechanism to produce new grids will follow the requirements needed and meet all the constraints. A fitness function is designed to produce legal grids. Second, a GA will be tested for performance and time efficiency. The conclusion of this paper will relate how suitable and useful GA is in carrying the objectives of this study. The challenges lie on how GA will represent a Sudoku grid in the process and the effectiveness of its operators such as crossover and mutation. The second task will show how GA performs against human in solving Sudoku puzzles.

Keyword: Genetic Algorithm, Sudoku.

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