Project Proposal

Motivation and Rationale

Context, Problem, Rationale?

The Context:

Sudoku is a logic-based number placement puzzle game. The aim is to fill a grid, usually 9x9, with numbers so that each row, each column and each smaller 3x3 box contains the digits from 1-9 only once. When a puzzle is created a portion of the grid is already completed and a good solution will allow the solver to come to only one solution.

The Problem:

When a sudoku is solved by a human they use logic by looking at where a certain number appears in the grid but for a computer to simulate this is almost impossible. Therefore, three main types of algorithm have been developed for solving this problem: Backtracking, stochastic and constraint satisfaction problem. The problem is that these algorithm types perform differently under different conditions of puzzle and finding the best algorithm is important.

The Rationale:

In my project, I intent to develop a test bed that allows for sudoku puzzles to be created at different levels of complexity that will allow me to compare algorithms from the three different categories of potential sudoku solving algorithms. This will allow me to compare the implemented algorithms using different puzzles including puzzles that have no single solution.

Aims & Objectives

Explanation of each objective and overall aim

Aim: To explore a range of sudoku solving algorithms and compare and contrast them using a range of difficulty of puzzles.

Objectives:

|  |  |
| --- | --- |
| Objectives | Explanation |
| Explore current methods of sudoku solving and select 3 |  |
| Establish test data for comparison of algorithms |  |
| Develop test bed to allow comparison of algorithms |  |
| Implement algorithms into the test bed |  |
| Evaluate implemented sudoku algorithms at multiple complexities |  |
| Explore state of the art sudoku solving tools evaluate selection |  |

Background

Table of sources that will be useful for the project

Each entry in the table should consist of three elements: a citation of the source (which will be included in detail in the list of references), a sentence or two summarising the source, and a brief explanation why this source is relevant to the project.

Description and relevance

Work Plan

Diagram of work plan

Explanation of work plan

Link each objective to the work plan (how its going to be achieved)

Identify risks

References