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Project 6: Sudoku

This project is about using optimization method to solve sudoku problems. In this project, I decide to use Linear Programming to solve sudoku, and the code is based on the given example on kaggle page. In this project, we try to minimize the objective function. And we set all the rules of sudoku to be the constraint, with the format Ax=b. Each number should only appear once in a row, column, box.

The accuracy rate of linear programming is not high, but it is acceptable. I looked through several different methods about solving sudoku, and I saw that the convolutional neural networks method has amazing accuracy rate. However, the implementation is too complicated for me and I could not understand. To be honest, the method of linear programming is the only one I could understand.

The accuracy rate for the small data set one is one hundred percent, but it is low for the small data set two. For the large data set one, the accuracy rate for the one thousand data randomly chosen with random seed 42 is about 80%.

There is a problem that I am wondering. Sometimes there could be more than one solution for a sudoku problem, but in this project, the code seems can only work when the solved sudoku is same as given solution. I don’t know if my understanding is wrong or not. I think that would influence the output of the function.