CS405 Introduction to Empirical Modelling

Tenth Warwick Electronic Bulletin on Empirical Modelling (WEB-EM-10)

"Machine Educable Engine on Noughts And Crosses"

MSc Coursework Assignment

November 19, 2013

Abstract

This project is to build a machine educable engine in noughts and crosses. The noughts and crosses game is a paper-and-pencil game for two players, X and O, who take turns marking the spaces in a 3×3 grid. Since there are several different noughts and crosses models among EM projects, it will be helpful to just focus on machine learning area. A tentative idea of this work is to imply with matchboxes and coloured beads. At the start of the game, all boxes are filled with several coloured beads representing different squares on the board. During the game, each move is to make current player's mark (X or O) on the squares until the game ends. Put one more bead on each square of the winning box. Remove the beads from the losing ones. Reset the beads on the games ended in a draw. By doing this, it increases the chance for the computer to make moves leading to win.

Modelling Study Description

First step is to study the original game models, to find out if they are suitable for implying the self-learning model. After that, try to imply the method mentioned above using the information in http://www.it.uu.se/edu/course/homepage/ai/menace. At the same time, read some resources around this area, such as 'A Few Useful Things to Know About Machine Learning.' (Domingos, Pedro), try to find other methods to realize machine learning. At the present, I think this project will use 'tkeden', because the algorithm overweight the implying environment. If time allows, I want to try to imply this method in pjawn game or other similar ones.

Primary References

[1]http://www.it.uu.se/edu/course/homepage/ai/menace
[2] Domingos, Pedro.A Few Useful Things to Know About Machine Learning.Communications of the ACM. Vol. 55 Issue 10, p78-87. 10p. 1 Color Photograph, 1 Diagram, 1 Chart, 2 Graphs. Oct2012.

Provisional Weighting

50 Paper
50 Model