Comparison of Artificial Intelligence techniques for training a Neural Network to play a game

Ovidiu-Andrei Radulescu
- 40283288

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Abstract

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1 Introduction

This piece of writing aims to investigate different Artificial Intelligence (AI) methods used in the training of Neural Networks (NN or NNs).

Artificial Intelligence (AI) is intelligence demonstrated by machines, as opposed to natural intelligence shown by humans and other animals. As computers started progressing and becoming better and better at numerical calculations, their use-cases became more complex with the employment of algorithms, which are sequences of actions that resemble the way a human mind would approach a problem, thus making a computer exhibit certain capabilities of the human mind (Wang, 2007).

A Neural Network (NN), sometimes called an Artifical NN, is an interconnected system formed from simple processing elements, inspired by (but not identical to) a biological brain. Such a system learns how to perform a task by adapting or learning from a set of training patterns. This processing ability of the network is "stored in the interunit connection strengths,or weights." (Gurney, 2014).

To understand how best to attempt to create multiple Neural Networks that will ultimately be able to solve tasks, this essay aims to: define the meaning of a Neural Network, as well as the Artificial Inteligence methods used to train a NN; breakdown the different kinds of training methods to find the advantages (and disadvantages) of each, depending on their use case; look into the various applications of Neural Networks and provide the technological context in the modern day by looking at the history and the development, both past, present and future; conduct an investigation into existing environments used as benchmarks for a Neural Network's accuracy and efficiency; make a decision as to which environments are best suited for use within this project; consider how this project could be expanded upon in future developments.

References

[1] Leslie Lamport, *LaTeX: A Document Preparation System*. Addison Wesley, Massachusetts, 2nd Edition, 1994.

Appendices

A Project Overview

A.A Example sub appendices

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B Second Formal Review Output

Insert a copy of the project review form you were given at the end of the review by the second marker

C Diary Sheets (or other project management evidence)

Insert diary sheets here together with any project management plan you have

D Appendix 4 and following

insert content here and for each of the other appendices, the title may be just on a page by itself, the pages of the appendices are not numbered, unless an included document such as a user manual or design document is itself pager numbered.