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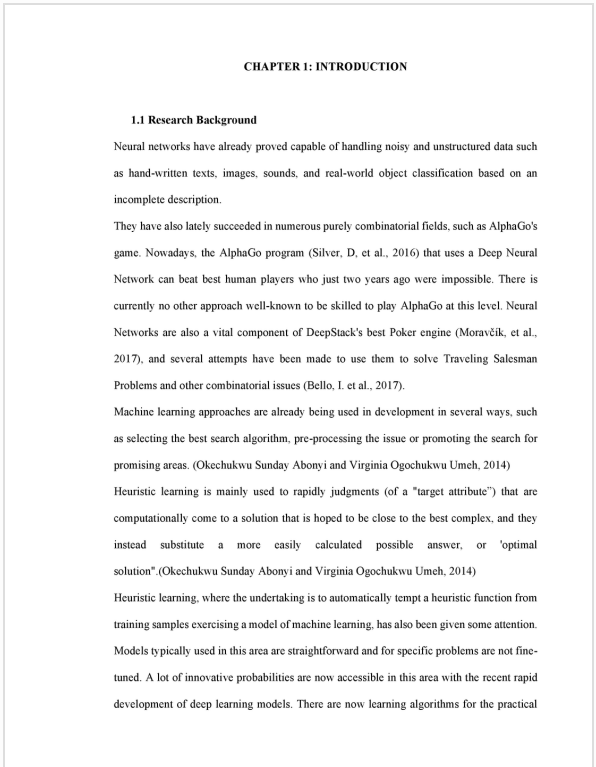

CHAPTER 1: INTRODUCTION

1.1 Research Background

Neural networks have already proved capable of handling noisy and unstructured data such as hand-written texts, images, sounds, and real-world object classification based on an incomplete description.

They have also lately succeeded in numerous purely combinatorial fields, such as AlphaGo's game. Nowadays, the AlphaGo program (Silver, D, et al., 2016) that uses a Deep Neural Network can beat best human players who just two years ago were impossible. There is currently no other approach well-known to be skilled to play AlphaGo at this level. Neural Networks are also a vital component of DeepStack's best Poker engine (Moravčik, et al., 2017), and several attempts have been made to use them to solve Traveling Salesman Problems and other combinatorial issues (Bello, I. et al., 2017).

Machine learning approaches are already being used in development in several ways, such as selecting the best search algorithm, pre-processing the issue or promoting the search for promising areas. (Okechukwu Sunday Abonyi and Virginia Ogochukwu Umeh, 2014)

Heuristic learning is mainly used to rapidly judgments (of a "target attribute") that are computationally come to a solution that is hoped to be close to the best complex, and they instead substitute a more easily calculated possible answer, or 'optimal solution".(Okechukwu Sunday Abonyi and Virginia Ogochukwu Umeh, 2014)

Heuristic learning, where the undertaking is to automatically tempt a heuristic function from training samples exercising a model of machine learning, has also been given some attention. Models typically used in this area are straightforward and for specific problems are not fine-tuned. A lot of innovative probabilities are now accessible in this area with the recent rapid development of deep learning models. There are now learning algorithms for the practical