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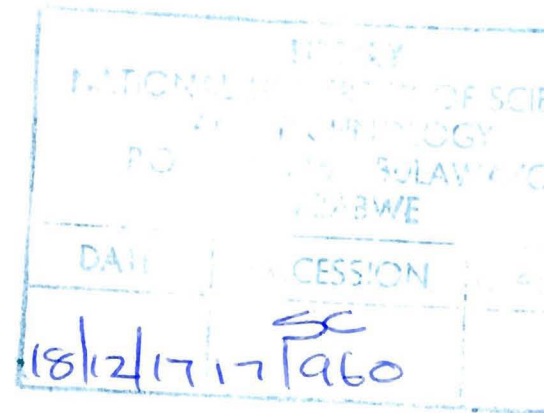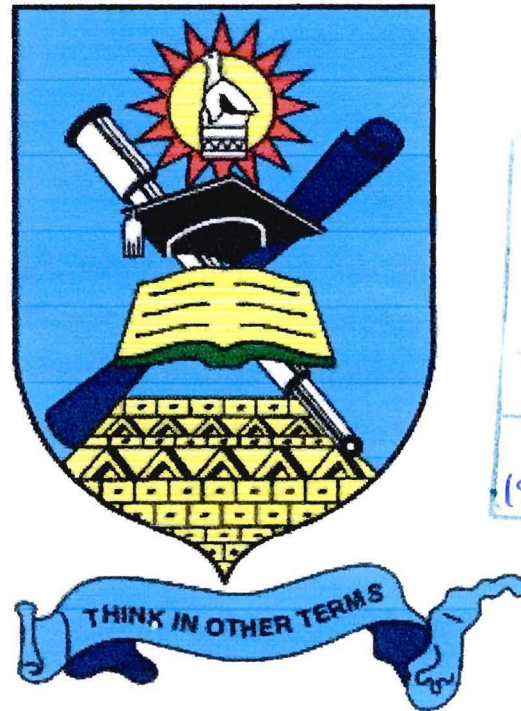
Competitive Learning Optimisation for Self-Organising Maps using the Bat Algorithm

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Abstract

Self-Organising Maps (SOM) have commonly been implemented in the clustering domain due to their exceptional capabilities in handling complex data. However studies have shown that SOM learning sometimes have weaknesses such as slow convergence time and being trapped at the local minima. Literature shows that hybrid techniques coupling SOM with nature inspired optimisation techniques have promising results in curbing the slow convergence problem. This dissertation proposes the use of Bat Optimisation (BO) in improving the learning of SOM for solving various clustering problems. The weights of the SOM are optimised using BO to obtain better output quality. The proposed method has been tested on the iris standard dataset. The experimental comparison between SOM and BOSOM, yields a promising result with better average accuracy and quantisation errors compared to SOM as well as a convincing significant test.