

2802ICT Intelligent Systems Assignment 2

Michael Ellicott
s5276830

May 25, 2023

Contents

1 Decision Trees 3

1.1 Software Design 3

1.2 Experiments 3

1.3 Findings 3

2 Neural Networks 4

2.1 Software Design 4

2.2 Experiments 4

2.3 Findings 7

1 Decision Trees

1.1 Software Design

- Node class
- DecisionTree class

1.2 Experiments

1.3 Findings

2 Neural Networks

2.1 Software Design

- NeuralNetwork class
- structure

2.2 Experiments

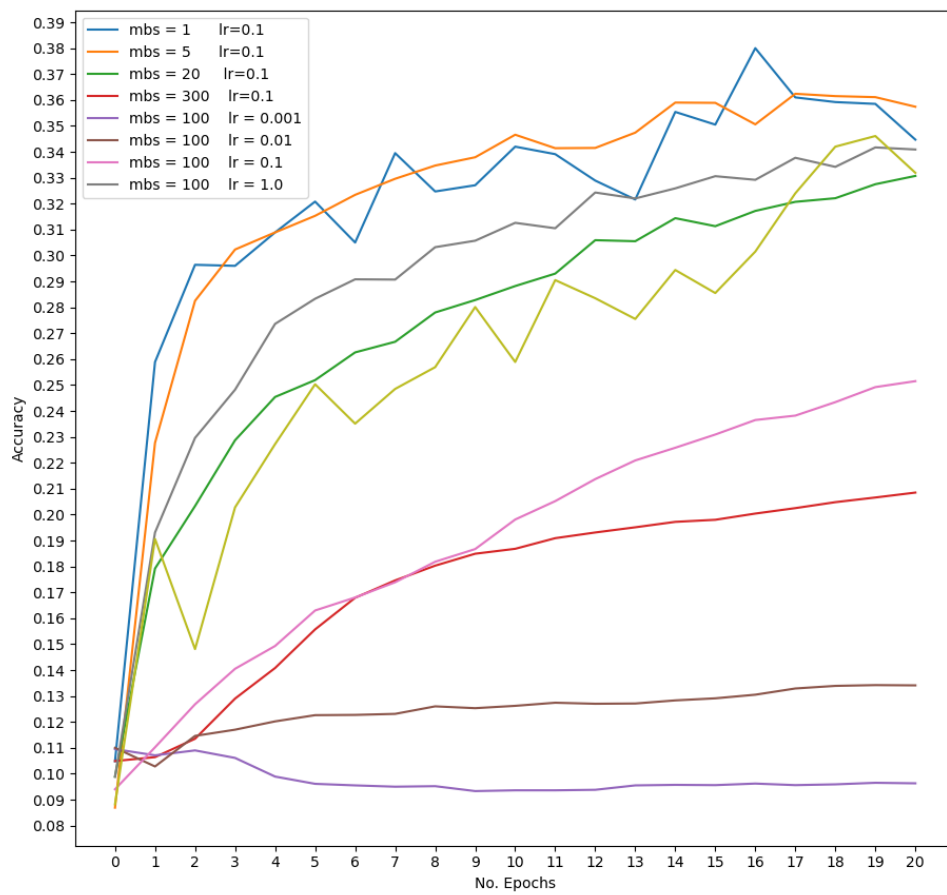
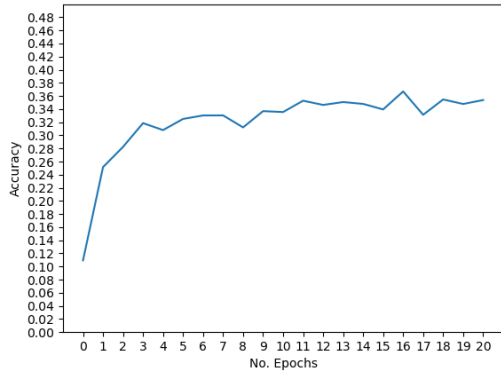
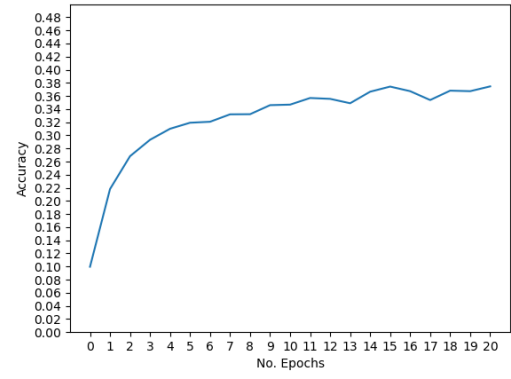


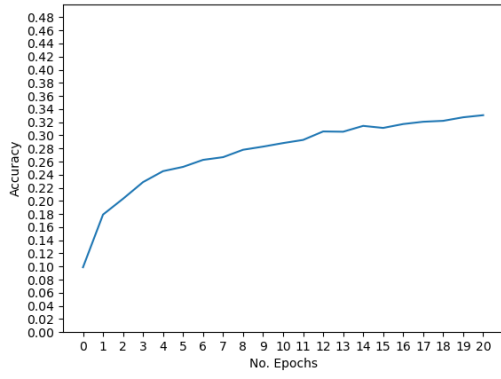
Figure 1: Comparison



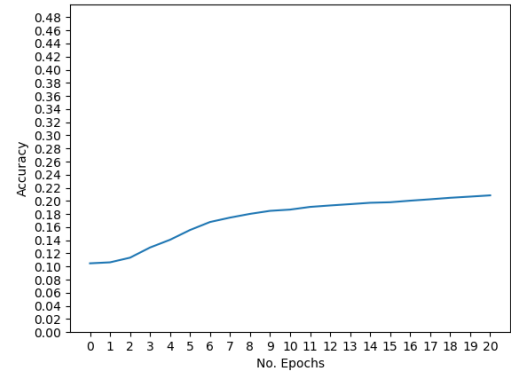
(a) mbs = 1, lr = 0.1



(b) mbs = 5, lr = 0.1

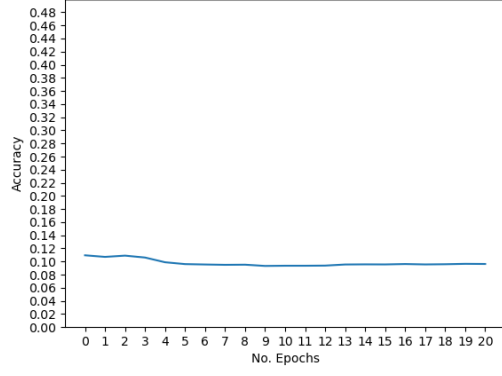


(c) mbs = 20, lr = 0.1

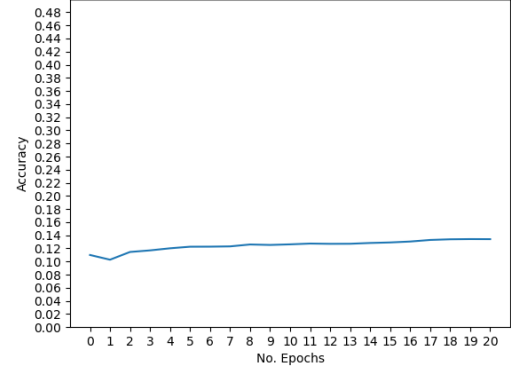


(d) mbs = 300, lr = 0.1

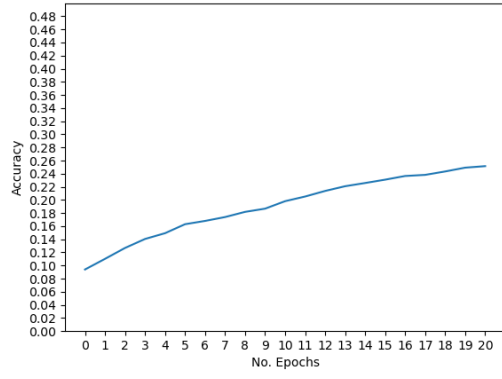
Figure 2: Effect of mini-batch size on accuracy over epochs



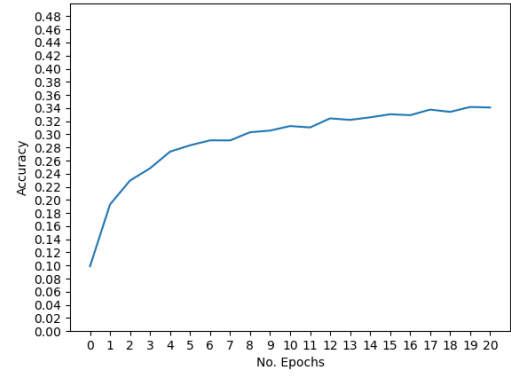
(a) $mbs = 100$, $lr = 0.001$



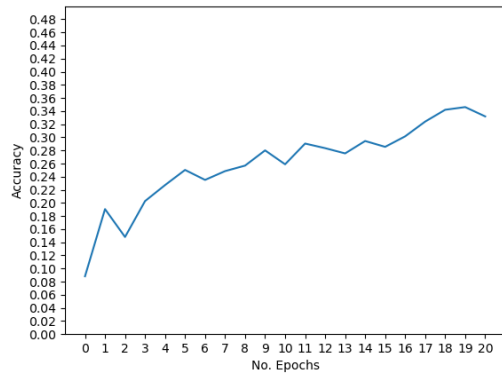
(b) $mbs = 100$, $lr = 0.01$



(c) $mbs = 100$, $lr = 0.1$



(d) $mbs = 100$, $lr = 1.0$



(e) $mbs = 100$, $lr = 10$

Figure 3: Effect of learning rate on accuracy over epochs

2.3 Findings

Some text belongs here.

Conclusion

Neural networks are good.