Handwritten digit recognition

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1. Preliminaries

Handwritten digit recognition is a simplified problem of handwriting recognition problem. The model only need to classify 10 different digits. The training set, MNIST was given by LeCun et al. 1998. I use a subset of it. In the implement, I use back propagation neural network (BP) with 2 hidden layers. Hidden layer 1 and 2 are activated by rectified linear unit and output layer is activated by softmax function.

2. Methodology

2.1. Required packages

- numpy
- matplotlib

2.2. Main functions

3. Empirical Verification

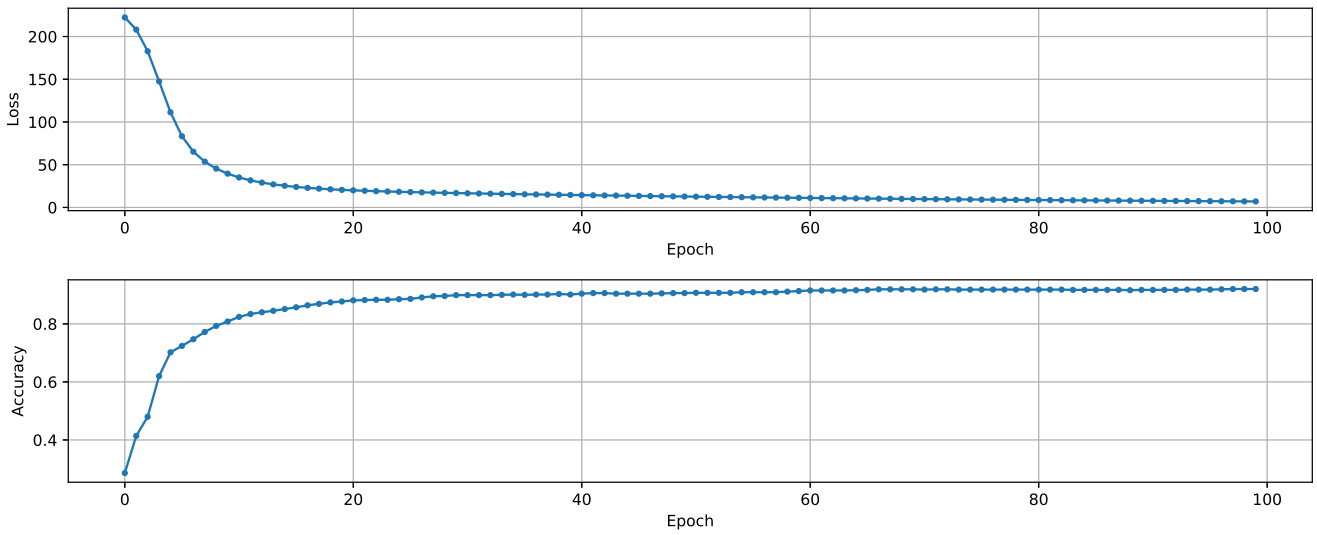

Figure 1. Loss and Accuracy

3.1. Performance

References

[1] W. Chen, Y. Wang, and S. Yang, "Efficient influence maximization in social networks," *Proceedings of the 15th ACM SIGKDD international conference on Knowledge discovery and data mining* - KDD 09, 2009.

[2] P. Shakarian, A. Bhatnagar, A. Aleali, E. Shaabani, and R. Guo, *Diffusion in social networks*. Cham: Springer, 2015.