Principles and development of intelligent systems Lab 1

**statement**

Data set collection

Part 1: back propagation algorithm (60%)

Part 2: convolutional neural network (40%)

**statement**

Plagiarism occurs, both sides are copied by zero.

Please submit in strict accordance with the deadline, exceeding the daily deduction of 20% of the total score.

For more questions, send mail to fengjt16@fudan.edu.cn or zhouyi13@fudan.edu.cn consulting.

Data set collection

DEADLINE: 2017/09/29 23:59:59

Task: using a computer drawing program of each poem by drawing Chinese characters below 10 times if it is not due to the state of life and death, weal or woe.

**Requirement**：

Size is 28 \* 28 pixels

The font size is 1 pixels (the thinnest pattern of the pencil in the Windows drawing tool)

The background is white and the text is black

Each word is placed in its own folder, the folder name is set as the current word, the number in the sentence 1~14, and the corresponding 1, corresponding to 2

And so on.

Submit: all picture files will be placed under the student ID name folder, packaged and uploaded to the WORK\_UPLOAD/LAB1/DATASET directory, for example

15302011926- Lin Zexu.

Part 1: back propagation algorithm (60%)

DEADLINE: 2017/10/09 23:59:59

Task: use reverse propagation algorithm (back-propgation) to complete the following tasks:

Regression: fitting function.

Category: classify 14 handwritten Chinese characters.

Requirement：

(50 points) design scalable, easy to adjust network structure, for example, you can flexibly set the number of layers, the number of neurons, learning rate, activation function, etc.. Development

There is no limit to the use of the existing neural network framework. (10 \* 2) on the regression tasks and classification tasks, the accuracy meets the required requirements:

The sample of the data is generated by itself, and the average error is less than 0.01 for the random sampling in the interval.

The handwritten Chinese character data set is downloaded from the LAB/LAB1, and the classification accuracy is required to be published by the teaching assistant in real time.

(30 points) the preparation of experimental documentation may include, but is not limited to:

Code infrastructure

Experimental comparison of different network structures and network parameters

Personal understanding of back propagation algorithms

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Documentation requires neat, detailed, beautiful, and exported to PDF format.

Submitted: all the code, documents placed in the student name - name folder, packaged, uploaded to the WORK\_UPLOAD/LAB1/PART1 directory, for example

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