SS 2019
Programming 2 – CTS2

Monitored Assignment 2

Write a Java/JavaFX application which allows to paint an enlarged 16-by-16 pixel pattern on a canvas using click and drag with the primary mouse button. A click with the secondary mouse button clears the pattern.

In addition, there are three function buttons, eight character buttons plus an output instrument.

Function button `New` creates a new neural network as implemented in package `ffbp`. This network should be configured like this:

```
FFBP net = null;
....
int[] layout = {256, 16, 8};
net = new FFBP(layout);
net.randomize(-0.1, +0.1);
net.setEta(0.5);
net.setAlpha(0.5);
```

The `256 doubles` in the input vector corrrespond to the 256 pixels in the 16-by-16 pixel pattern. The response of the net is coded in 8 outputs showing the reaction for `'A'` through `'H'` and subsequently shown in the output instrument..

Function button `Noise` is a `ToggleButton` which indicates whether 10% noise will be applied to the standard character pattern during retrieval and when "training" the network.

Function button `Learn 500 Cycles` selects a random character out of the interval `'A'` through `'H'`, applies it to the net, then applies the desired reaction, and propagates back this reaction in order to effect a slight change in the weight structure of the connections ... all this 500 times.

Finally, the character button show each character on the 16-by-16 pixel pattern --- with noise applied, if the `Noise` button is set.

Each change in the16-by-16 pixel pattern should lead to a neural reaction which is reflected in the output instrument.

Your application should look and feel like the teaser application `MA 2.jar`.

Put in ample comments into your source code --- and, of course, the names of the group members. Write a one-page documentation for your program, also with at least the names of the group members, a full disclosure of your references, and a description of the classes and ideas used.
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All group members must be present for the acceptance meeting --- you might have to answer questions.

Acceptance Session: June 25, 2019 08:00 C08