NUS National University of Singapore

SWS3009
CLUSTER3-02

ARTIST

Team 2: EXIT

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TEAM INTRODUCTION:

Team Members : Yan Yuening, Su Hanjian, Duan Yifan, Gao Ya

Cluster : SWS3009: Deep Learning + Tele-Robotic

School of Computing Summer Workshop 2019

Department of Computer Science

National University of Singapore

FUNCTIONALITY:

To be an *Artist!*

Read, Draw, Write Poems and Recite it!

1. Recognise handwriting to get “keywords”.
2. Draw a picture based on the keyword.
3. Generate a quatrain.
4. Recite the poem without passion and enthusiasm!

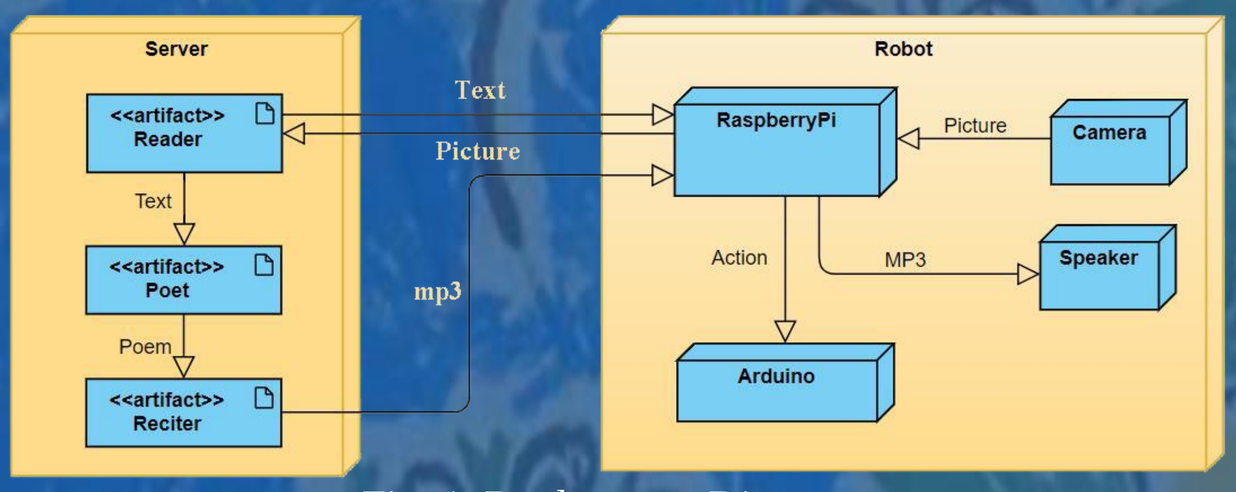


Fig. 1. Deployment Diagram

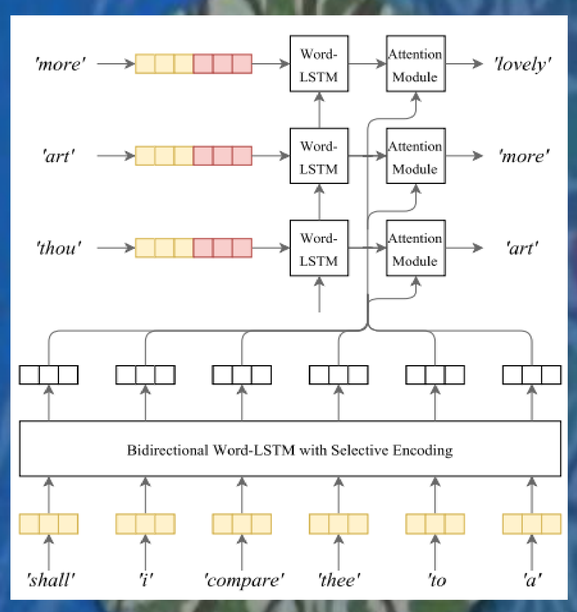


Fig. 2. The Word-LSTM

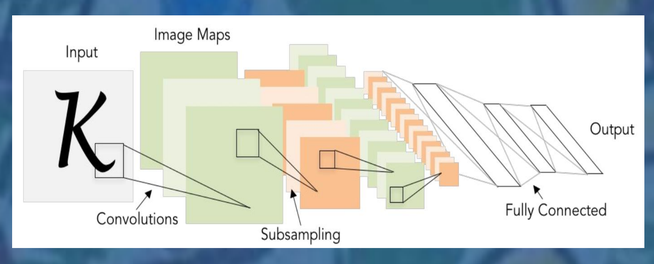
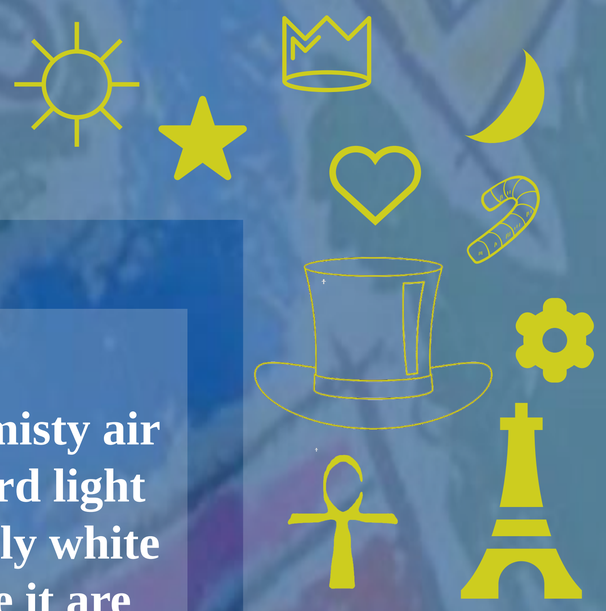


Fig. 3. The LeNet-5

KEYWORDS:



POEM EXAMPLE:

in sudden twilight, strange in misty air
where it shines all out of inward light
making the sun more beautifully white
a border of the borders where it are

IMPLEMENTATION:

Handwriting Recognition:

Achieve this task by using CNN. The structure of the model is LeNet-5. It has two convolution layers with max pooling layers, a fully-connected layer and a droupout layer.

Poem-Generator:

It is a sequence-to-sequence model employing bidirectional Word-LSTM with attention. It uses encoder to encode the preceding context and uses the decoder to decode one word at a time. The dataset consists of Shakespearean sonnet and other sonnet collected online.

Picture Drawing:

We use the additional servo motor to raise and drop the pen to achieve the car’s intermittent drawing. In order to make the angle in the image more accurate, we use PID algorithm on gyroscope to correct vehicle travel angle.

Speaker:

With the the API provided by Baidu AI platform, we can easily transfer the generated poem into a mp3 file, and then play this mp3 file on raspberry by using a speaker.