CoWriter : Two case Studies

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ABSTRACT

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Keywords

handwriting learning, mutual modelling, ...

1. INTRODUCTION

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2. CASE 1 : DIEGO

Diego is a 5 years hold child. A few days before the experiment, his mother provided us with a picture showing some of his handwriting works (figure 1). This sample allowed us to create a dataset of letters based on his main mistake. Then we run a PCA algorithm feed by this dataset to extract eigenvectors representing the direction of the most important deformations (figure 2). Our idea was to use it to make the robot amplifying the mistakes of Diego. Thus, by correcting the robot, Diego was actually going to correct himself.

2.1 Questions

This was the first time we where trying a long-terme interaction between a child and the CoWriter robot. So the first aim of this study was to see if such an interaction was simply possible. If we could create an environement to keep a child engaged during one hour just in writing words with the robot. The second question was focused on the content of the interaction. Our goal was to figure out what extent the child would actually improve the robot's writing.

2.2 Experimental settings

The experiment took one month. It was divided in four sessions of one hour, one session per week. In order to justify to the child an activity where a robot wants to learn handwriting, we decided to adduce a scenario. There where two Nao robots: a blue one (Mimi) and an orange one (Clem).

Figure 1: Homework performed by Diego before the experiment. It gives an overvew of his starting level in handwriting.

Figure 2: Letter deformation along an eigenvector. *Left* : the non-deformed letter (origin of the eigenspace). *Middle* : the actual Diego's deformation (from figure 1). *Right* : exaggerated deformation along the eigenvector that encode Diego's mistake.

They where introduced to the child as two hold friends. During the first three sessions, Mimi was in "mission" : it was exploring a mysterious hidden base. Each week, just before the session, it was sending a postal mail contening a picture, a curious object it found and a few words about its discoveries. The pictures was representing itself exploring a dark room of the hidden base (that was actually our laboratory's workshop). The objects where 3D printed. In fact, there where puzzle pieces of a small 3D model of Nao robot but regarding them one by one, it was not easy to guess it.

2.3 Results

3. CASE 2 : HENRY

Description of experiments & results with Diego

3.1 Experiment design

3.2 Results

4. DISCUSSION

5. CONCLUSIONS