

**CENG 492**  
**Computer Engineering Design**  
**Weekly Progress Report – 9**  
**ErikSoft**  
**12.05.2011**

Work Done:

This week, we had a meeting with our sponsor Özgür Alan. The topic of the meeting was how we will improve learning rate, how to test our learned agents and how to integrate our web service with their facebook game. The important decisions are explained in the following paragraph.

In the current version of the ANN structure, we had 104 boolean inputs. Each two of them represents the place of a card. Now we will represent each card with four bits.

Current: 00  
          01  
          10  
          11

New Idea: 1000  
           0100  
           0010  
           0001

The reason of this change is that all inputs will be orthogonal to each other in their four dimension vector space. With this way we hope learning will be more successful, but it is not guaranteed.

Another problem with our system was memory issue. We have very huge number of training data, however we can not give a huge data set into learning algorithm. The memory increases rapidly and we can not get output, it crashes. The proposed solution is to teach agents incrementally. For example maximum 1000 inputs are okay, then we will divide 1 million input into 1k input sets. We will shuffle them also, because it may help learning more accurately.

İlkcan & Taylan have tried two new tools for ANN. Previous weeks we were developing with weka library. We found pybrain ( a machine learning library implemented with python) and neuroph ( an ANN library, implemented in Java, has a netbeans interface). Each of the libraries have some advantages/disadvantages over others. For example with pybrain, we can load more data and with neuroph, we can easily test the learned ANN. Neuroph is giving the same output for different inputs, we think it is caught to local minima.

With pybrain library, we get %18 learning success.

With Weka, we tried different algorithms other than ANN. J48 tree algorithm gives better results and do not use much memory as ANN. We had %23 success with just 600 training data.

Alper & Volkan are trying to build the desktop application. It will be a swing based GUI. We already have all necessary codes for making the game played by humans or agents. After some change, the game will be ready but the gui will take time.

They also prepared the presentation which is at 16/05. It is the last presentation before the final demo. We will present why our product is needed, how it is going to be used in the market, which technical work has done until now.

#### Work To Do:

Next week, we are going to try different learning algorithms, different input style, different libraries. We will also develop a component for testing the learned agents, with their teachers, and compare the results.

We will make our rule based agents available for the sponsor, complete the integration.