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MSc Internship or "onderzoekstage" – Mid term evaluation

To be filled in and signed by the student and the supervisor(s) halfway through the term of the MSc internship or "onderzoekstage".

Student name and signature: Frans Simanjuntak
Student number: S3038971
Date: April 25th 2017

Supervisor and signature: Prof. Dr. ir. Marco Aiello

Second supervisor and signature: Dr. Alexander Lazovik

Daily Supervisor : Azkario Rizky Pratama

Number of Credits (EC): 15

Quality of supervision:
To be filled in by the student

It's such a great opportunity for me to be able to do my research with good quality of supervision from my supervisors. Most of the time, I communicate directly with my daily supervisor Azkario. While he is in China, we can still continue to discuss via a messenger app or Skype if necessary.

Before I started my research, first thing first, Azkario asked me to state the outcome of my research briefly. It's very important and helpful in order to define the plans and schedules for the entire research. We manage to conduct a regular meeting 3 – 4 times a week from the beginning. During the meeting, we discuss about the progress of the research, the problem that I encountered, and my plan for the next day. Azkario also shared some knowledge and experience related to the project (time series and neural network). He also gave me some papers to read in order to get insight for my research.

Provisional assessment:
To be filled in by the supervisor(s)

Frans manages his internship tasks very well. The next step after gathering enough data, we are planning to fit the problem of recognizing electricity appliances into Recurrent Neural Network models.

We are expecting a number of outputs from the collected data. That is, we can view a time series electricity data from different perspectives, e.g.: various window size, overlap/non-overlap window, different features, etc.

Planning of work/research still to be done:
To be filled in by the student and the supervisor(s)

Until today, the research is going well. We have managed to accomplish half tasks of the research such as:
- Configuring Raspberry Pi 3
- Writing program in Java to read the raw data from Smappee sensor
- Writing program in Scala using rugds framework to provide API for the Smappe consumer to be able to store sensor data into rugds database
- Writing program in Android to manage the ground truth while collecting raw data

- So far, we have collected some raw data from 7 devices and still collecting the data which is going to be used as training data.

In order to recognize devices based on electricity consumption, there are two common approaches: Snapshot and Delta view. In this research, we will use Snapshot approach because it is considerably more robust and it can recognise the outliers based on the mean value of data points in a defined window interval. Currently, Frans is writing a program in python to perform the classification based on the concept of Recurrent Neural Network (RNN) combined with Snapshot approach. RNN is a neural network that processes sequential data and takes in as input both the new input at the current timestep and the output (or a hidden layer) of the net in the previous timestep.

He expects to train data by the first week of June after writing the RNN code. Then, testing using the actual testing data and analyzing the results will be done in the second week along with the enhancement of the program if necessary. Then, writing up report as final deliverable will be started in the third week.