After a short conversation we decided to meet with the three of us. It is known that the pre-processing of datasets take the most time in certain projects. Emile did already uploaded the files and made it possible that the spoken dataset of one dimension had been changed in a 3 dimensional dataset. After that we needed to find a proper solution to combine the two datasets. First we were thinking about combining the datasets in one dataset that has three dimensions. But after that we stacked the datasets together. Then we shared the preprocessing code and made the agreement that Sen would try a MLP, Janne an perceptron and emile a LSTM

Emile

Emile tried first to train an LSTM and reshaped the combined dataset in 3 dimensions. This was a simple LSTM code with early stopping, but after several modifications the algorithm predicted the train set quite well but the validations turned out to have zero accuracy. This has let to the decision to try to a 1-D Convnet (Ackermann, 2018). Using the code of Ackermann did not worked out, because the running time took to long. To reduce runtime Emile changed the number of Convolutional Layers from four to two, besides that he also changed the integer, the dimensionality of the output space, to 32 for the first convolutional layer and 80 for the second one. After running the Convnet he concluded that the Earlystopping was not required, since the model decreased in accuracy after more epochs. These modifications improved the accuracy to for one epoch to 89 %, but still not enough. Finally, he added several dense layers which decreased the accuracy of the trainset but increased the accuracy of the validation set to 97. Besides that, he made use of a binary\_crossentropy as loss function, the adam optimizer and a batch size of 129

# Bibliography

Ackermann, N. (2018). *Good Audience*. Retrieved from Introduction to 1D Convolutional Neural Networks in Keras for Time Sequences: https://blog.goodaudience.com/introduction-to-1d-convolutional-neural-networks-in-keras-for-time-sequences-3a7ff801a2cf