Driver model design and identification (thesis @ POLIMI & TU Gratz, refer to Ing. Vignati and Prof. Sabbioni)

The thesis will focus on the driver modelling. Several driver models are available in literature and most of them are based on classical or modern control theory. These models are quite useful for vehicle dynamics simulation and work quite well. The difficulties are in understanding how far these models are from a real human driver. The aim of the thesis will be to try to classify different human driver behaviour based for example on g-g diagram. This diagram presents in fact the acceleration limits of the driver accounting in most of the cases for an elliptical fashion curve. This is not true especially for common drivers that tend to have only one acceleration at the time avoiding combined conditions. Another effect is the preview distance, which represents the driver capability in anticipating his actions, that is found to be speed dependent. The target of the thesis is then to create a classification procedure and classify different driver based on the above cited models. A method could be based on neural networks and machine learning.