UNIVERSITY of GUELPH

COLLEGE of ENGINEERING AND PHYSICAL SCIENCES

SCHOOL OF COMPUTER SCIENCE

MSc Defence

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Identification of Driver Types Using Drive Lab Data

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Abstract

With a computer-aided driving simulator, the data of the driver's every move will be recorded. Because of its economic and risk-free features, the driving simulator is becoming popular in vehicle design, road construction and human factors research. In this regard, we have three hypotheses: 1. Drivers' performance in a driving simulator can reflect real driving situations; 2. Different driving behaviour can reflect different personalities; 3. Drivers can be classified based on the data collected by a driving simulator. To test these hypotheses, the data from two psychology experiments were analyzed. The driving behaviour of different drivers when passing the same hazard were compared and analyzed. An unsupervised K-means was used to give preliminary labels and an artificial neural network was applied to verify the labels. Interestingly, a significant gender effect was found. Training the neural network with only female data and then saving the model to test only male data showed a low prediction accuracy. Repeating the experiments with only female data gave the best accuracies.