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Acoustic feedback of control elements in cars

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Due to the complexity of modern car's on-board systems car manufacturers tend to use menu based user interfaces. These interfaces offer a relatively low number of control elements for a large number of functions. Optimization of both haptical and acoustical feedback of the remaining control elements can improve both acceptance and security of operation.

Since cars nowadays are no longer sold simply as technical but as lifestyle products it is crucial for the success that the potential customer perceives every single aspect of the car to be valuable. Obvious examples are exterior design and material quality. Since the user interface of the car can be judged even before a test drive the feeling of buttons and switches is a key aspect.

This work presents the results of a jury test which is part of an ongoing research project focused on acoustical feedback. Subjects were asked to judge both recordings of real control elements as well as synthesized signals which were presented on purpose-built hardware. Based on the subjective results the recorded signals were analyzed in order to identify spectral features which correlate with the subject's responses.