Extended Abstract

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E-BABE-Modal finite element analysis of the first global body in white Saudi car Gazal 1

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Abstract:

Automated driving functions are able to increase vehicle safety and customer comfort. They also have potential to improve road traffic management and to reduce negative impacts of traffic on environment. In this way, car manufacturers, supplier and research institutes increasingly perform R&D activities in the area of automated driving on the way to the self-driving car. The submitted work treats an evaluation of automated driving functions for the application in electrically driven low-cost city cars. The intended evaluation is focused on SAE level 5, which means fully automated cars that do not require a driver, and even no passengers. This type of vehicles might not only be used for logistics, delivery service and similar applications, but also as self-driving people mover. Autonomous navigation of such vehicles is similar to those of robots, which includes tasks of localization, path planning, and path execution. These tasks require appropriate sensor systems and computation strategies to recognize and cluster continuously changing environmental conditions in daily traffic scenarios. The applied sensor and object recognition technology, representing cost-intensive modules plays an important role. In this context, different sensor technologies are evaluated in terms of their capability of road and surrounding area observation, driveway and obstacle recognition, the robust provision of data for vehicle control and path planning as well as economic parameters. Sensor fusion comes to use to combine advantages of different technologies and to provide reliable object detection under different environmental conditions. The paper closes with exemplary applications of autonomous driving technologies in small city vehicles and a prospect of development trends.

The application of temporary anchorage devices such as micro-implants or miniscrews and miniplates are readily accepted in orthodontic treatment as a method to reinforce anchorage. Titanium alloy (TiA) micro-implants is well-known due to its biocompatible advantage as compared to stainless steel (SS). The purpose of this study was to measure and compare the rate of anchorage loss between SS micro-implants and TiA microimplants. Methods: The study sample comprised of twenty-four patients (9 male: 15 females; mean age 23.8 + 5.38 years) were gathered from orthodontic clinic. All subjects required extraction of upper first premolars and maximum anchorage reinforcement. Subjects were randomized equally into two groups, TiA group and SS group. Following alignment and leveling, 1.6 mm in diameter and 8 mm in length micro-implants were inserted between first molar and the second premolar in the maxilla and loaded with 150 gm. retraction force with Nickel-Titanium closed coil spring after 4 weeks of insertion. Study casts were taken prior to retraction (T0), at 1 month (T1), 3 months (T2) and 6 months (T3). The casts then were digitized using View box version 4.0. Results: Anchorage loss was measured by the mesial movement of first maxillary molar. Mean for anchorage loss was found to be 0.13 mm with TiA micro-implants retraction and 0.18 mm with SS micro-implants retraction.

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