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| UTC Project Information | |
| Project Title: Investigating the Effect of Drivers' Body Motion on Traffic Safety | |
| University | University of Florida |
| Principal Investigator | Angelos Barmpoutis |
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| Funding Source(s) and Amounts Provided (by each agency/organization) | UF: \$101,280 UAB: \$31,693 |
| Total Project Cost | \$132,972 |
| Agency ID or Contract Number | 2013-051S |
| Start and End Dates | September 1, 2013 to November 24, 2015 |
| Brief Description of Research Project | |
| <p>This research proposes a novel approach for studying the actual movements of drivers inside the vehicle, when performing specific maneuver types or while engaging to secondary tasks that require a certain body movement. With the use of two low-cost infrared depth sensors, the 3D shape of selected participants will be constructed, as they are performing various driving maneuvers and as they are engaged in secondary tasks while driving. The experiments will be performed in real life conditions with the use of an instrumented vehicle owned by UF-Transportation Research Center. An eye-tracker will be used to facilitate the data collection process. The 3D point cloud time-series collected from the eye-tracker and the infrared sensors will be analyzed using tensor-based models. A rigorous analysis of the results is expected to provide insights related to what drivers actually do (or do not do) that may trigger an unsafe</p> | |

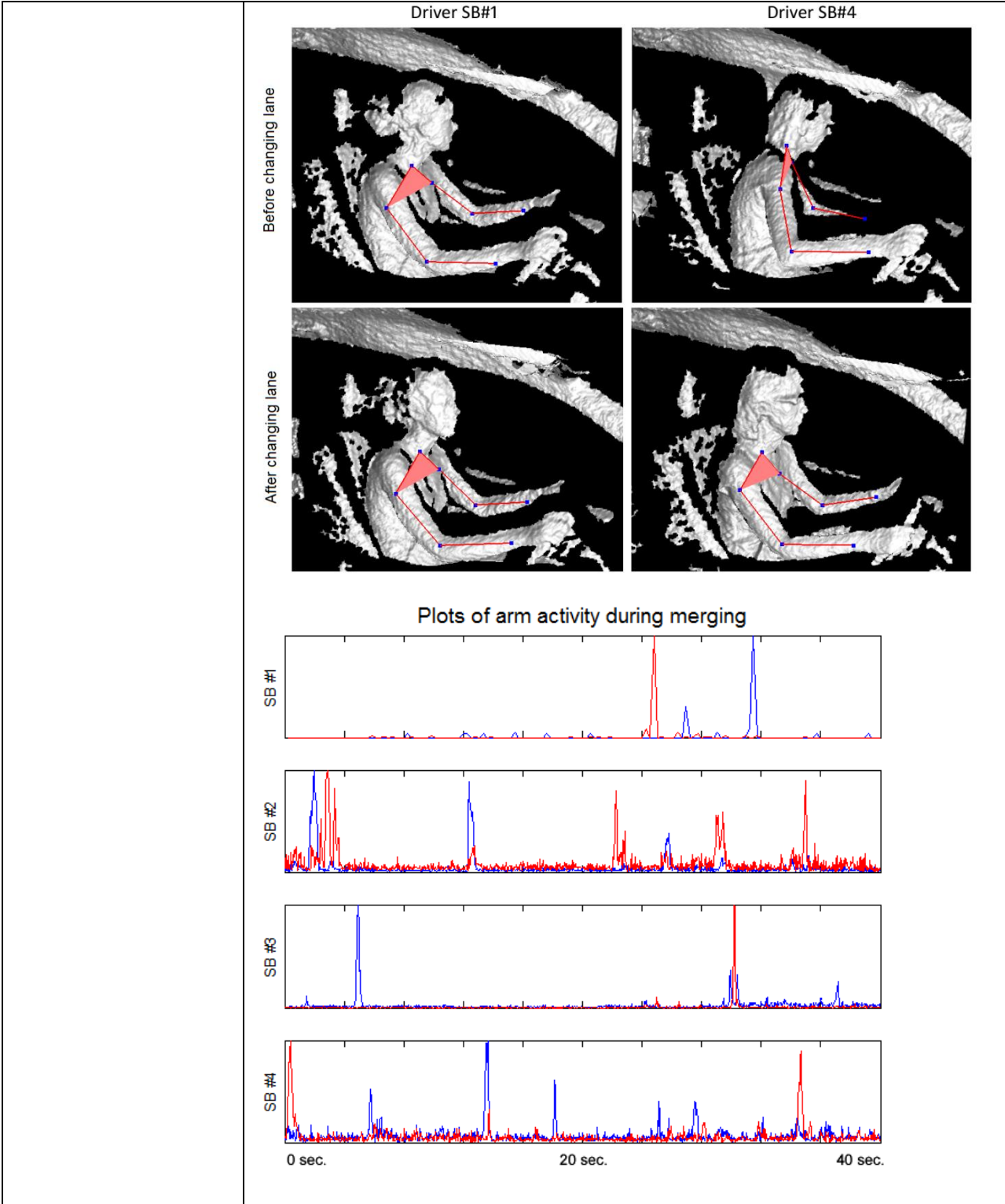
event. A comparison between different driver groups will also be performed. The main objective of the proposed research is to investigate the relationship between potentially unsafe driving events and the actual driver body posture and movements when performing a driving maneuver (e.g., lane changing, merging) under different traffic and geometric configurations and when engaging with a secondary task.

Describe
Implementation of
Research Outcomes
(or why not
implemented)

- A Database was build of 3D motion data from 35 drivers performing merging and lane changing maneuvers.
- Quantitative comparison performed regarding the variability of motions
- Qualitative comparison performed regarding the driver behavior
- Results presented in 3 full conference papers, 1 book chapter, and 1 journal publication.
- More details will be included in the final report.

Place Any Photos
Here





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| | <p style="text-align: center;">Plots of head activity during merging</p> |
| <p>Impact/Benefits of Implementation (actual, not anticipated)</p> | <ul style="list-style-type: none"> • An open-access scientific database has been designed and published on-line that provides the scientific community with rich 3D motion information of driver behavior: http://research.dwi.ufl.edu/dmddb/ • An international competition was successfully organized for analyzing the driver's motion patterns and the outcomes have been publicly announced. • A webinar was held on this topics by Dr. Angelos Barmpoutis. View recording: https://mctrans.adobeconnect.com/p3qea8m8oxy/ |
| <p>Project Websites</p> | <p>Final Report on STRIDE Website: http://stride.ce.ufl.edu/uploads/docs/STRIDE_2015-051S_-_Final_Report_Barmpoutis.pdf</p> <p>Final Report on TRB/TRID: https://trid.trb.org/view/2013/P/1343130</p> |