



CENTER FOR CONNECTED AND AUTOMATED TRANSPORTATION

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| Project Title | AV Occupant ID Optical Based Occupant Identification and Classification for Autonomous Vehicles | |
| PI (Up to 2) | Matt Reed (0000-0001-6650-0727) | |
| Telephone # | 734-936-1111 | |
| E-mail: | mreed@umich.edu | |
| Institution: | University of Michigan | |
| Department: | UMTRI | |
| Industry or Government Principal, organization, and contact information | Ford | |
| Most relevant CCAT research thrusts (choose all applicable) | <input checked="" type="checkbox"/> Enabling Technology <input checked="" type="checkbox"/> Planning and Policy <input checked="" type="checkbox"/> Human Factors <input type="checkbox"/> Infrastructure Design and Management <input checked="" type="checkbox"/> Control and Operations <input checked="" type="checkbox"/> Models and Implementation | |
| Funding Request | | |
| Matching Funds and Source (if any) | Ford \$199,999 | |
| Total Project Cost | \$199,999 | |
| Contract Number | 69A3551747105 | |
| Project start/end dates | 2/2/2017 – 1/31/2019 | |
| Project Abstract | <p>Due to recent advances in sensing technologies, modern vehicle occupant classification systems enable personalized vehicle experiences and adaptive occupant crash protection. However, most systems are limited to occupant detection and simple classification, and thus, accurate estimation of body characteristics are needed to support more advanced occupant classification. This paper presents a model-based characterization method for vehicle occupants using a 3D depth camera. This method automatically estimates standard anthropometric data of an occupant such as stature and weight along with the body shape by fitting a statistical body shape model to depth image data. The system is even robust to a wide range of clothing and is capable of generating accurate results. A variety of other algorithms were developed to improve the fitting result, including seat geometry detection and head location estimation. The new capability has a range of potential applications for improving occupant safety and providing an optimized interior configuration for the occupant. The final report for this project will not be publicly available.</p> | |
| High-level implementation plan | Research is ongoing | |
| Project Metrics | This project was feasibility demonstration | |
| Web Links: | ccat.umtri.umich.edu | |

