



TOPIC	A Personalized Highway Driving Assistance System
ORGANIZERS	Student Leadership Council and Faculty of ACIT Institute and TECHLAV Center
AREA	Driving assistance systems, autonomous vehicles
SPEAKER	Saina Ramyar
DATE	Friday March 3, 2017
TIME	3:00 – 4:00 P.M. (EST)
VENUE	Fort IRC 410, North Carolina A&T State University, UTSA and SIPI will be joining through video-conferencing
FEES	No Charge

SYNOPSIS

The majority of the driving assistance systems currently available are focused on safety, and they generate default maneuvers independent of the driver or passengers. However, different drivers have different driving styles and pre-planned maneuvers may not satisfy everyone. Thus, in this study it is proposed that drivers' styles be incorporated into the advanced driving assistance systems without compromising vehicle safety in order to increase the drivers' satisfaction and comfort in autonomous vehicles.

In this study, a control approach for automated highway driving, that can learn from human driving data, and is applied to the longitudinal trajectory of an autonomous car, is proposed. Naturalistic driving data are used as samples to train the model offline. Then, the model is used online to emulate what a human driver would do by computing acceleration. This reference acceleration is tracked by a predictive controller which enforces a set of comfort and safety constraints before applying the final acceleration. The controller is designed to balance between following the model's commands and maintaining vehicle safety. As a result, the proposed controller is able to handle dynamic traffic situations while performing like a human driver. This approach is validated on two different scenarios using MATLAB simulations.

ABOUT THE SPEAKER



Saina Ramyar is a third year PhD student at North Carolina A&T State University. She is currently a graduate research assistant at the ACIT Institute working on driver behavior modeling for Autonomous Vehicles and Advanced Driving Assistance Systems (ADAS). She received a Bachelor and a Master degree in Electrical Engineering both from Ferdowsi University of Mashhad, Iran on September 2011 and February 2014 respectively.