AUTONOMOUS CONTROL & INFO TECH

TOPIC	**Driver Behavior Modeling near Intersections Using Hidden Markov Model based on Genetic Algorithm**
Organizers	Drs. Karimoddini & Homaifar; Gorji, Lacewell (PhD student)
AREA	Control, Autonomous vehicles, Machine Learning and Data mining
SPEAKER	Seifemichael Amsalu, PhD students, ACIT Center, North Carolina A&T State University
DATE	24 March 2015, Wednesday
TIME	2:00 PM to 3:00 PM
VENUE	ACIT Center, Room 342, Fort IRC Bldg, North Carolina A&T State University, 1601 East Market Street, Greensboro, NC 27411
FEES	No Charge

SYNOPSIS

The capability to estimate driver's intention leads to the development of advanced driver assistance systems that can assist the drivers in complex situations. Developing precise driver behavior models near intersections can considerably reduce the number of accidents at road intersections. In this study, the problem of driver behavior modeling near a road intersection is investigated using Hidden Markov Models (HMMs) based on the hybrid-state system (HSS) framework. In the HSS framework, the decisions of the driver are represented as a discrete-state system and the vehicle dynamics are represented as a continuous-state system. The proposed modeling technique utilizes the continuous observations from the vehicle and estimates the driver's intention at each time step using HMMs optimized using Genetic Algorithm. The developed algorithm is trained and tested using naturalistic driving data collected from a sensor-equipped vehicle operated in the streets of Columbus, OH and provided by the Ohio State University.

ABOUT THE SPEAKER

Seifemichael Amsalu is a fifth semester PhD student at North Carolina A&T State University. He is currently a graduate research assistant at the ACIT Center working on Driver Models for Both Human and Autonomous Vehicles with Different Sensing Technologies and Near-crash Activity. He received a Bachelor degree in Electrical and Computer Engineering and a Master degree in Communication Engineering both from Addis Ababa University, Ethiopia on August 2007 and September 2011 respectively.