MAE Seminar SERIES

THURSDAY,
APRIL 18

3:30 PM

114 HOCHSTETTER

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GPS AND ITS USE FOR VEHICLE NAVIGATION AND CONTROL SYSTEMS

ABSTRACT

Many vehicle systems require accurate position, velocity, and attitude information. Such technologies include anti-lock braking, electronic stability control, anti-roll control, adaptive cruise control, lane departure warning, and lane keeping assistance systems. The Global Positioning System (GPS) has provided the ability to determine a body's position, velocity, and attitude anywhere on the surface of the globe and can be augmented with on-board vehicle sensors in order to provide the needed information for these vehicle navigation and control systems. For example, GPS can be integrated with low cost inertial sensors, cameras, Lidars, or radars to provide vehicle dynamic measurements, lane-level positioning of vehicles, and relative position of vehicles for future safety systems. This talk will provide an overview of GPS and its measurements as well as several uses of GPS, in conjunction with other sensors for vehicle navigation and control systems.

BIO SKETCH

David M. Bevly is the McNair Endowed Professor in the Department of Mechanical Engineering and director of the GPS and Vehicle Dynamics Laboratory at Auburn University. David received his B.S. from Texas A&M University in 1995, M.S from Massachusetts Institute of Technology in 1997, and Ph.D. from Stanford University in 2001 in mechanical engineering. He joined the faculty of the Department of Mechanical Engineering at Auburn University in 2001 as an assistant professor. Dr. Bevly's research interests include control systems, sensor fusion, GPS, state estimation, and parameter identification. His research focuses on vehicle dynamics as well as modeling and control of vehicle systems. Specifically, Dr. Bevly has developed algorithms for control of off-road vehicles and methods for identifying critical vehicle parameters using GPS and inertial sensors.

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