Automatic Control & Systems Engineering.

On the way to accident free driving

Rolf Isermann, Prof. Dr.-Ing.
Technische Universität Darmstadt

Tuesday 10th May 2011
Mappin Hall
Mappin Building

Programme:
4.00 – 5.00 pm Lecture
5.00 – 6.00 pm Reception

FREE ADMISSION
To book a place please email
d.proctor@sheffield.ac.uk

www.shef.ac.uk/acse/news

You are invited to the:
2nd Harry Nicholson Distinguished Lecture in Control Engineering

Delivered by:
Rolf Isermann, Prof. Dr.-Ing. Dr. h.c., Institute of Automatic Control, Technische Universität Darmstadt

Emeritus Professor Dr.-Ing. Isermann was, for many years, Professor and Head of the Laboratory for Control Engineering and Process Automation, Institute of Automatic Control, Darmstadt University of Technology, Germany.

His textbooks on Process Identification, Digital Control Systems, Adaptive Control Systems, Mechatronic Systems, Fault Diagnosis Systems, Engine Control and Vehicle Drive Dynamics Control are well known and highly regarded.

He was an early champion of mechatronics and in the 2003 MIT Technology Review Magazine he was identified as one of the Top Ten representatives of emerging Technologies for the field of Mechatronics.

Professor Isermann is the holder of many distinguished international awards for his innovative research and has held many important and influential positions promoting control engineering. He has served IFAC in many capacities and was Vice-President, 1996- 2002

On the way to accident free driving

Rolf Isermann, Prof. Dr.-Ing.

Technische Universität Darmstadt

Abstract and background

Modern vehicles are increasingly influenced by electronics and many automatic control functions. A road map for driver assistance systems shows how the driver is supported by automatic stabilization, lane keeping, and in the future, by collision avoidance.

Control engineering is at the heart of these developments. These are considered first for the application oriented areas of IFAC, the International Federation of Automatic Control. The presentation will provide an example of a collision avoidance system arising from the results of the University - Industry research project "PRORETA".

The first part of the example is a collision avoidance system for obstacles. The control function of automatic full braking and/or automatic swerving in the last possible moment is performed, when the driver does not react, by using a method based on the fusion of LIDAR and video camera signals. This is demonstrated in video clips.

The second part of the example is a driver assistance system for overtaking maneuvers. By fusing the RADAR and video camera signals, the overtaking maneuver on rural roads with two lanes is predicted. In the case of dangerous situations first warnings are given and to avoid a crash the vehicle is automatically braked down such that the driver can take the car back behind the vehicle to be overtaken. Some simulations and videos of real overtaking driving situations demonstrate the application of the new driver assistance prototypes.

For further information please visit: www.shef.ac.uk/acse/news