



Department of Automatic Control & Systems Engineering  
would like to announce the following seminar:

**WHAT DOES A MOBILE ROBOT ACTUALLY DO?**  
**Quantitative Description and Modelling of Mobile Robot Behaviour**

***Speaker: Dr. Ulrich Nehmzow***  
**University of Essex**

**Wednesday 30<sup>th</sup> November 2005**  
**at 14:10**

**Location: St Georges Mappin Building LT1**  
Coffee and Biscuits will be served afterwards.

**ABSTRACT**

Transportation, cleaning, inspection, exploration, disaster relief – mobile robotics is an interesting discipline not only because of its technical/industrial applications, but also as an instrument of science.

Increasingly, mobile robots are used to investigate theories of cognitive behaviour, to simulate learning and adaptation processes in animals, and as research tools in Artificial Intelligence and Cognitive Science. Robots have been built that learn from experience, construct maps and navigate by them, and adapt to changing circumstances around them.

However, to date the development of suitable control programs for mobile robots still relies on trial-and-error methods, because we lack a suitable theory of robot-environment interaction. Mobile Robotics still has elements of an art, rather than a science.

In this seminar the speaker will discuss what form a theory of robot-environment interaction could take, and give examples, based on the robotics research at Essex, on how robot behaviour can be described quantitatively, using chaos theory, and modelled, using nonlinear NARMAX models. The speaker will demonstrate how models of robot behaviour can be used to analyse and understand better what a mobile robot actually does.