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Automatic  
Control and  
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Engineering

The Department of Automatic Control & Systems Engineering  
is pleased to announce the following seminar:

**Reliable robot localization: A constraint programming approach over dynamical systems**

**Mr Simon Rohou**

*ENSTA Bretagne – Lab-STICC  
France*

**Friday, 26 January 2018 at 12:00**

Graduate School LT01, Pam Liversidge Building

**Abstract**

The localization of underwater robots remains a challenging issue. Usual sensors, such as Global Navigation Satellite System (GNSS) receivers, cannot be used under the surface and other inertial systems suffer from a strong integration drift. On top of that, the seabed is generally uniform and unstructured, making it difficult to apply usual Simultaneous Localization and Mapping (SLAM) methods to perform a localization.

Hence, innovative approaches have to be studied. The presented method can be characterized as a raw-data SLAM approach, but we propose a temporal resolution — which differs from usual methods — by considering time as a standard variable to be estimated. This concept raises new opportunities for state estimation, under-exploited until now. However, such temporal resolution is not straightforward and requires a set of theoretical tools in order to achieve the main purpose of localization.

This talk will present contributions in the field of mobile robotics that also offer new perspectives in the areas of constraint programming and set-membership approaches. We provide a reliable contractor programming framework in order to build solvers for dynamical systems. This set of tools is illustrated with a realistic underwater experiment.

**Biography**

Simon Rohou received a M.Sc. in Information Technology at INSA de Rouen, France, in 2014. He recently defended a Franco-British PhD thesis between ENSTA Bretagne - Lab-STICC (Brest, France) and the University of Sheffield (Sheffield, UK). His work focuses on robotics and especially set-membership localization methods for autonomous underwater robots.