Autonomous Adaptive Ocean Sensing
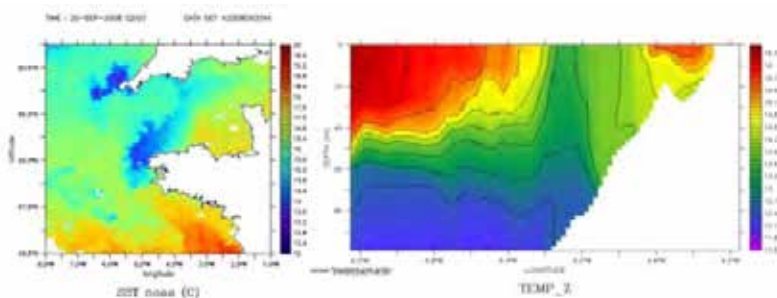
Prathyush P Menon
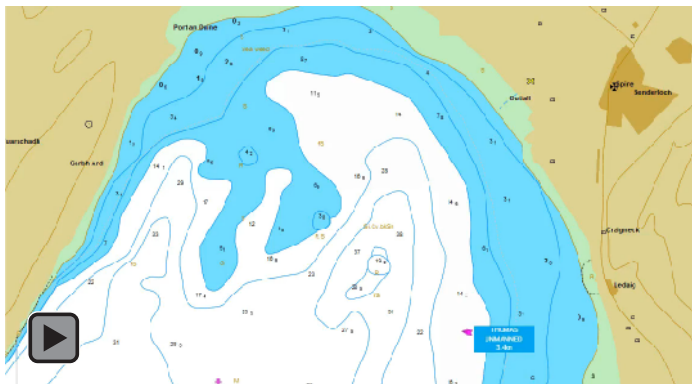Email: P.M.Prathyush@exeter.ac.uk   Skype: prathyush.menon
Expertise - Control, Optimization and Uncertainty Analysis

Autonomous behaviour

- Without piloting intervention (stand by to support, or to take over control)

- Decide the guidance/control commands (for e.g., way-point, or speed and heading) either on-board or on-shore

- Decision made based on instantaneous measurement of a quantity of interest (for e.g., temperature, sonar, Chlorophyll, TPH, etc.)

- Assume suitable sensor payload provides 'Right data at right rate and right format' (can account intermittent loss of data in a networked environment)
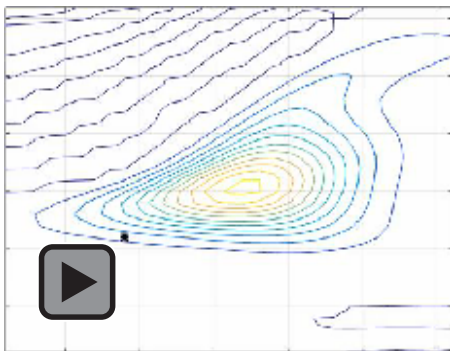
Sea trials

Features to offer

- Seeking source

- Optimal boundary tracking

- Cooperation in networked environment

- Specific leader follower strategy for information gain

- Embedded framework

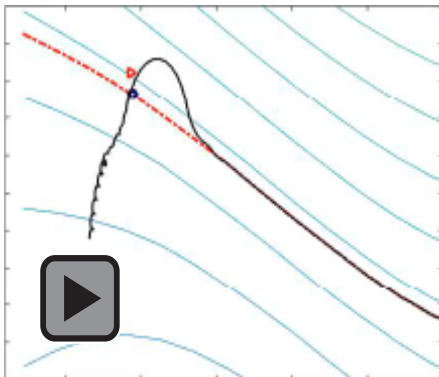- Probabilistic learning (exploiting prior and measurements)

Features to offer

Source seeking

Features to offer

Master/slave

Features to offer

Collective sampling

In Progress

- ► Collision avoidance

- ► Connectivity enhancement

- ► Similar autonomous modes for Gliders (Straight, Helix, and Complex patterns)

- ► Distributed information processing

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Thank you.