

Where Should The Sensors Go?

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Integrative Think Tank, 2018

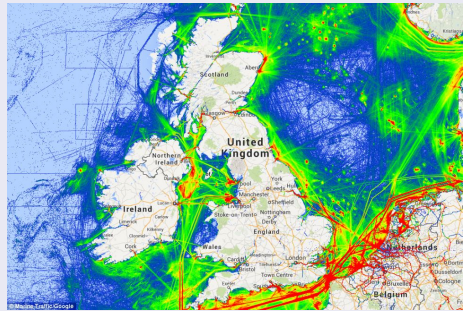
Outline

The problem

We have some data on where ships go.

Using this, where should we place the sensors to minimise the difference true ship position and estimated ship position?

UK maritime activity



- Ships emit sound. The sound attenuates according to

$$P(x + \Delta x) = P(x)e^{-\alpha(\omega)\Delta x} \quad (1)$$

where $\alpha(\omega) = \alpha_0\omega^\eta$

Second Slide Title

Optional Subtitle

- A_S is the matrix with ij th element the sound received at point i from a source at j .

A_{TS} is the reduced matrix

$$\max \min(A_{TS}^T A_{TS}) \quad (2)$$

$$\approx \max \mathbb{E}[\min(A_{TS}^T A_{TS})] \quad (3)$$

For Further Reading I



Boyd, Stephen and Mutapcic, Almir.

Stochastic subgradient methods.

Lecture Notes for EE364b, Stanford University, 2008