FAO Plamen Angelov, Dept. Communication Systems, Lancaster University.

Re: MSc Abstracts

Dear Plamen,

We are interested in proposing abstracts for this year's MSc. Students for projects with you. Please find below abstracts regarding the topics we are particularly interested in.

…..

Project 3: Acoustic echo cancellation using

Academic Supervisors: P. Angelov of Lancaster University
Industrial Supervisors: D. Carline & P. Robinson of J&S Marine Ltd.
Required Skills: Adaptive filter theory, Matlab

Acoustic echo cancellation is widely used in telephony (e.g. Mobile, VOIP etc.) for situations where the speaker is in a closed environment, leading to echoed versions of the received signal *and* transmit signal being presented to the transmitter. In order to compensate for this, it is usual to model the impulse response of the echo path as an adaptive filter with coefficients modified in real-time using an LMS algorithm, for example. The underwater communications channel is also susceptible to the effects of an enclosed acoustic space, but due to its time-invariant and non-linear nature, a *flexible* structure is needed for the calculation of filter coefficients. It is therefore proposed to use the Takagi-Sugeno model with evolving structure (eTS) algorithm to design a robust and highly versatile acoustic echo canceller for underwater communication. It is also anticipated that this same algorithm could provide a robust means of channel characterisation and estimation, which is a possible extension to this work. This work has the advantage of being novel in its application and so could lead to future publication.