IEEE Control, Aerospace and Electronic Systems Chapter

School of Electrical & Electronic Engineering

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Ph.D. Candidate

School of Electrical & Electronic Engineering,

The University of Adelaide

Venue: Room S111, Engineering South, Adelaide, South Australia, Australia

Date: Thursday 20th April 2017
4:00pm - 5:00pm
Refreshments provided from 5:00pm

Radar Target Detection in Sea Clutter Using Time Frequency Analysis

Abstract

Small target detection in the maritime environment remains a challenging problem. Maritime radars traditionally use non-coherent processing methods due to the time-varying and range-varying nature of the Doppler spectra. Moreover, the detection scheme needs to be able to distinguish the target from the background interference (sea clutter and noise). However, the radar backscatter or interference may contain sea-spikes which can last for seconds and resemble targets. In the seminar, our recent results using time-frequency analysis to improve target detection in medium grazing angle X-band sea clutter will be presented. The first technique uses different components (sub-bands) of a stationary wavelet transform (SWT) to reveal different spectral characteristics of the radar backscatter. The second method uses sparse signal separation with a tuned Q wavelet transform and an adaptive penalty parameter.

Speaker

Vichet Duk was born in Kampong Cham, Cambodia. He received his Bachelor of Engineering (Electronics and Communications) with Honours from the University of South Australia after having done half of the degree in Cambodia and Master of Engineering (Electrical and Electronics) from the University of Adelaide in 2010 and 2011, respectively.

After having worked in the health care technology industry, he commenced his Ph.D. research project on signal processing techniques for maritime radar in 2014 at the University of Adelaide under the supervision of Dr. Brian Ng and Dr. Luke Rosenberg. This work is funded by a scholarship from the Defence Science and Technology (DST) Group, Australia. With the support from DST Group and research abroad scholarship from the University of Adelaide, he spent three months in 2016 as a researcher at the University College London (UCL), London, UK.

All Welcome

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