

ELECTRICAL & COMPUTER ENGINEERING SEMINAR

“Control of Unmanned Aerial Vehicles for Passive Detection and Tracking of Multiple Emitters”

by

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Abstract & Biography

Abstract. The number of applications in which Unmanned Aerial Vehicles (UAVs) are being applied is rapidly growing and their capabilities are increasing. An application of UAVs of military importance is that of using a team of UAVs carrying passive sensors to detect and track enemy emitters, e.g., radars. In this presentation an algorithm for trajectory optimization of autonomous aerial vehicles performing multiple target tracking is proposed. The problem is approached by formulating it as a partially observed Markov decision process (POMDP) and developing a moving-horizon solution taking into account short and long term costs. To demonstrate effectiveness, results of simulations involving multiple UAVs and targets are presented.

Biography. Peter Sarunic is a research scientist in Distributed Electronic Warfare Group, Defence Science and Technology Organisation (DSTO), Australia. He obtained the degree of Bachelor of Engineering from the University of Adelaide in 1981. After completing his B. Eng. degree, Peter worked as an Electrical/Electronic Engineer in private industry for 5 years. He then joined the Defence Science and Technology Organisation in 1986. His major areas of work were adaptive tracking, signal processing and radar systems engineering. While employed at DSTO, Peter completed a B.Sc. (mathematical and computer sciences) and a M.Eng. degree (electronic engineering). For his masters degree, he developed a multiple model adaptive tracking algorithm for use with electronically steerable phased array radars. In 1996 Peter moved overseas to Canada where he worked on radar and data fusion problems. In 1998, he returned to DSTO where he performed research on multipath track fusion for over-the-horizon radar, multisensor fusion and subsequently conducted research on electronic protection for radar. His current area of research is on combined passive sensor fusion and control of Unmanned Aerial Vehicles. The research forms part of his studies for the degree of Doctor of Philosophy at the University of Melbourne, Australia.

Please contact Prof. Edwin Chong, Edwin.Chong@colostate.edu, with any questions.