Department of Electrical Engineering
香港城市大學 City University of Hong Kong

Queen Mary University of London

CityU Architecture Lab for Arithmetic and Security (CALAS) Seminar Series

IEEE Aerospace and Electronic Systems Society

Sensor Location Optimization for Effective and Robust Beamforming

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IEEE AESS Distinguished Lecturer

Abstract:

In many applications, the sensor array's geometrical layout is assumed to be fixed and given in advance. However, it is possible to change the geometrical layout of the array including adjacent sensor spacing and these additional spatial degrees of freedom (DOFs) can be exploited to improve the performance in terms of either beamforming direction finding, or both. With the development of compressive sensing (CS) or the sparsity maximization framework, a new CS-based framework with a theoretically optimum solution (due to the convex nature of the formulation) has been developed for general sensor location optimization, with robustness against various array model errors considered too. In this talk, the CS-based framework for sensor location optimization will be presented for effective and robust beamforming, general introduction to both narrowband beamforming and broadband/wideband beamforming.

Biography:

Dr. Wei LIU received his BSc in Space Physics (minor in Electronics) in 1996 and LLB in Intellectual Property Law in 1997 from Peking University, China, MPhil from the Department of Electrical and Electronic Engineering, University of Hong Kong, in 2001, PhD in 2003 from the School of Electronics and Computer Science, University of Southampton, U.K. Since September 2023, he has been a Reader at the School of Electronic Engineering and Computer Science, Queen Mary University of London. His research interests cover a wide range of topics in signal processing, with a focus on array signal processing (beamforming and source separation/extraction, the direction of arrival estimation, target tracking, and localization, etc.), and its various applications.

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