

# *Friday's Seminar*

CITY UNIVERSITY OF HONG KONG  
CENTER FOR CHAOS AND COMPLEX NETWORKS

HONG KONG POLYTECHNIC UNIVERSITY  
DEPT. OF ELECTRONIC AND INFORMATION ENGINEERING

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Robotics and Automation/Control Systems Joint Chapter

**Jointly present**

**SEMINAR SERIES ON COMPLEX SYSTEMS, NETWORKS, CONTROL AND  
APPLICATIONS**

## *Outlier-Robust Matrix Completion via $l_p$ Minimization*

*by*

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Date and Time: [Friday, 1 March 2019, 4:30pm – 5:30pm](#)

Venue: Room [G6302, City University of Hong Kong](#)

Reception starts at [4:15pm](#)

(Language: English)

### **Abstract**

Matrix completion refers to the recovery of a low-rank matrix from only a subset of its possibly noisy entries, and has a variety of important applications such as collaborative filtering, image inpainting and restoration, system identification, node localization and genotype imputation. It is because many real-world signals can be approximated by a matrix whose rank is much smaller than the row and column numbers. Most techniques for matrix completion in the literature assume Gaussian noise and thus they are not robust to outliers. In this presentation, we introduce two algorithms for robust matrix completion based on low-rank matrix factorization and  $l_p$ -norm minimization of the residual with  $0 < p < 2$ . The first method tackles the low-rank matrix factorization with missing data by iteratively solving multiple linear  $l_p$ -regression problems, while the second applies the alternating direction method of multipliers in the  $l_p$ -space.

### **About the speaker**

Prof Hing Cheung So received the B.Eng. degree from the City University of Hong Kong and the Ph.D. degree from The Chinese University of Hong Kong, both in electronic engineering, in 1990 and 1995, respectively. Currently he is a Professor with the Department of Electronic Engineering, City University of Hong Kong. His research interests include detection and estimation, fast and adaptive algorithms, multidimensional harmonic retrieval, robust signal processing, source localization, and sparse approximation. He has been on the editorial boards of IEEE Signal Processing Magazine, IEEE Transactions on Signal Processing, Signal Processing, and Digital Signal Processing. He was also Lead Guest Editor for IEEE Journal of Selected Topics in Signal Processing, special issue on “Advances in Time/Frequency Modulated Array Signal Processing” in 2017. In addition, he was an elected member in Signal Processing Theory and Methods Technical Committee of the IEEE Signal Processing Society where he was chair in the awards subcommittee. In 2015, he was named IEEE Fellow.

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*All are welcome*