

SIG Name: **Data-Driven Cognitive Networks (D<sup>2</sup>CN)**

**Proposed Chair:**

**Li-Chun Wang,**

**Department of Electrical and Computing Engineering,**

**National Chiao Tung University**

[lichun@cc.nctu.edu.tw](mailto:lichun@cc.nctu.edu.tw)

**Proposed Vice Chair:**

**Yong Li**

**Dept. of Electronic Engineering,**

**Tsinghua University**

[Liyong07@tsinghua.edu.cn](mailto:Liyong07@tsinghua.edu.cn)

**Proposed Vice Chair:**

**Steve Uhlig**

**Deutsche Telekom Laboratories, Berlin, Germany.**

[steve.uhlig@qmul.ac.uk](mailto:steve.uhlig@qmul.ac.uk)

### **External LinkedIn Group web address**

Under construction. We plan to post the regular information exchange among the SIG members through a Google Group? Dr. Yong Li will take lead in providing the contents of the first version of the SIG website on ComSoc TCCN website.

### **Scope and Objectives**

In the last two decades, cognitive radio has emerged as an efficient way of improving the performance of communications systems, enhancing spectrum efficiency, and providing more flexibility in network management. A significant change in cognitive radio network (CRN) recently is that much more data are collected from various sources, including radio channels, user locations, service access data, social networking data, network-status and management data. The availability of these large amount of various types of data can potentially contribute to a revolution in CRN from a traditional knowledge-driven CRN into a more powerful data-driven CRN, which learning algorithm can drive to optimize its performance from the holistic aspects of signal processing (e.g. time series analysis), network planning, and user customization. In this SIG group, we provide a platform on the development of DDCN, including key technologies, data sharing opportunities and future research directions.

## Activities

The SIG sponsors and promotes technical publications, workshops, tutorials, student activities, standardizations, and other related activities in the areas relevant to big data and data-driven cognitive networks. Specifically, to obtain quality research and form this community, it is necessary to properly publicize the existence of the SIG. There are several ways of activities by which this can be achieved:

- **Propose Workshops** in the major and flagship IEEE conference of INFOCOM, ICC, GLOBECOM, etc. The following three specific workshops are in the plan: ICC 2018, INFOCOM 2019, GLOBECOM 2019.
- **Propose Special Issues** on IEEE JSAC, Trans. on Communications, Trans. on Wireless Communications, Trans. on Service Computing, Trans. on Information Theory, Trans. on Networking, Communication Mag., Signal Processing Mag., etc. Proposed the first SI on IEEE Transactions on Cognitive Communications and Networks before August of 2017, and proposed another SI on JSAC in the beginning of 2018.
- **Organizing regular meeting** and advertising in a more informal way: During special sessions at related conferences (INFOCOM, ICC, GLOBECOM, etc.), on the personal web pages of the SIG organizers, and through an email distribution list of potential members (which can be created with the list of potential member and from participants in recent special sessions). We plan to have our first meeting in GLOBECOM 2017.
- **Invitation talks:** we plan to invite some talk in workshop or regular meeting for this SIG from the world renowned researchers. The possible candidates are Professor Jon Crowcroft at University of Cambridge UK with the topic of "Machine Learning for Networking", Professor Jie Wu at Temple University USA with the topic of "Mobile Cognitive Network with Intelligence", Professor Sheng Chen at University of Southampton UK Professor with the topic of "large-scale human behavior data learning", Guohong Cao at The Pennsylvania State University USA with the topic of "data-driven video services", etc.
- **Building data-sharing community and organize competitions:** We aim to develop a network of members to publish their data and work collaboratively. Such collaborations are integral to the very nature of a data-sharing network, and are fundamental to increasing the quality and quantity of data available to whole society. We are planning to build a new platform that will significantly enhance the ability of data sharing to work collaboratively and efficiently, where the data competitions can be performed.

## **Senior Advisor**

Jon Crowcroft, University of Cambridge (networking)

Phillip Yu, University of Illinois Chicago (data mining/machine learning)

Sheng Chen, University of Southampton (communications)

## **10+ founding members**

HT Kung, Harvard University,

Pan Hui, Hong Kong University of Science and Technology

Meeyoung Cha, KAIST

Yong Li, Tsinghua University

Bo Han, AT&T Labs Research

Sue Moon, KAIST

Jörg Ott, Technische Universität München

Kun Tan, Huawei Technologies

Yan Chen, Fudan University