

## Special Interest Group Request Form

**SIG Name: Social Behaviour Driven Cognitive Radio Networks**

**Proposed Chair (name/affiliation/email):**

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**External LinkedIn Group web address (or equivalent, if applicable):**

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

**Scope and Objectives (please provide up to 200 words):**

In the last two decades, cognitive radios have emerged as an efficient way to improve spectrum utilization and provide more flexibility in networking. A significant change in cognitive radio networks (CRNs) recently is putting social behaviour in the loop. Many social behaviours can be sensed and even predicted by the machine learning and artificial intelligence (AI) based smart applications. In this context, the social behaviour is a new driven force for better performance in CRNs. In addition, emerging smart applications can strongly affect social behaviour, which will be a new driven force for proposing new applications in CRNs as well. In this social behaviour driven CRNs, critical technical problems should be solved to realize the potential benefits, e.g., how to efficiently formulate and utilize human-device

interactions to boost communication performance since the device holder are supposed to be mobile regularly, and how to facilitate the benefits of considering social behaviours and application characteristics from utilizing the devices' capability of caching and computing. Another major challenge is how to sense and understand social behaviours and application characteristics. In this SIG group, we provide a platform on the development of social behaviour driven CRNs to exploit and explore new dimensions.

### **Proposed activities for the first 12 months:**

The SIG sponsors and promotes technical publications, workshops, tutorials, student activities, standardizations, and other related activities in the areas relevant to social behaviour driven cognitive radio 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, SPAWC etc. The following three specific workshops or special sessions are in the near future plan, e.g., SPAWC 2018, GLOBECOM 2018, ICC 2019, and 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., IEEE Access, etc. Propose the first SI on IEEE Access before Jan. of 2018, and propose another two SIs on IEEE Transactions on Cognitive Communications and Networks, IEEE Wireless Communications, or IEEE JSAC before August 2018, and at the beginning of 2019, respectively.
- Organizing regular meetings and advertisings 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 members and from participants in recent special sessions). We plan to have our first meeting in GLOBECOM 2017.
- Invited talks: we plan to invite some talks in workshops or regular meetings for this SIG from the world renowned researchers. The possible candidates are Professors listed as follows
  - Prof. Hanzo Lajos at University of Southampton;
  - Prof. Jie Wu at Temple University;
  - Prof. Vincent Lau at Hong Kong University of Science and Technology;
  - Prof. Kwang-Cheng Chen at University of South Florida;
  - Prof. Zhu Han at University of Houston.

### **Senior Advisors**

Prof. Lajos Hanzo, University of Southampton (Communications)

Prof. Jie Wu, Temple University (Networking)

Prof. Zhu Han, University of Houston (Artificial Intelligence)

### **10+Founding Members (name/affiliation/email):**

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