SIG: Data-Driven Cognitive Networks (D^{2}CN)

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Data-Driven Cognitive Networks (D²CN) 2019-2021

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Scope and Objectives

- Data are collected from various sources, including radio channels, user locations, service access data, social networking data, network-status and management data.

- A revolution in CRN from a traditional knowledge-driven CRN into a more powerful data-driven CRN

- This sig provides a platform on the development of DDCN, including key technologies, data sharing opportunities and future research directions.

Workshop Activities

- UbiComp 2020 AppLens Workshop
  - **[AppLens 2020: The 3nd Workshop on Mining and Learning from Smartphone Apps for Users](#)**
  - **http://www.shazhao.net/applens2020/**
- Workshop co-chairs:
  - Sha Zhao (Zhejiang University)
  - **Yong Li (Tsinghua University)**
  - Sasu Tarkoma (University of Helsinki),

Tutorial Activities

- UbiComp 2020 Mobile App Tutorial: **Smartphone App Usage, Understanding, Modelling, And Prediction**
- Organizers
  - **Yong Li (Tsinghua University, China),**
  - Vassilis Kostakos (University of Melbourne, Australia),
  - Sha Zhao (Zhejiang University, Hangzhou, China),
  - Sasu Tarkoma (University of Helsinki, Finland)
- **Schedule**
  09:00-09:45 Background, App Data Collection and Datasets
  09:45-10:30 Smartphone and App Usage Modeling
  10:45-11:30 App Usage Prediction and Recommendation
  11:30-12:15 User Profiling from the App Usage, and Conclusion

Mobile App Usage Dataset

- A larger-scale of *context-aware app usage dataset*

- In this dataset, each entry contains an anonymized User identification, timestamps of HTTP request or response, the length of the packet, the domain visited and the user-agent field.

- http://fi.ee.tsinghua.edu.cn/appusage/

- Please download and use

Dataset statistics	
Duration	One week
City	One of the biggest city of China
Number of identified Apps	2000
Number of users	1000
Number of base stations	9800
Number of App category	20
Number of PoI category	17

Datasets and Open Code for
Data Driven Cognitive Networks

- Mobility dataset and prediction code

- Crowd-Level：https://github.com/FIBLAB/DeepSTN

- Individual-Level：https://github.com/vonfeng/DeepMove

- Data-Fusing：https://github.com/vonfeng/DPLink

- https://github.com/FIBLAB/3D-DGCN

- Mobile app usage datasets

- Short Term dataset：http://fi.ee.tsinghua.edu.cn/appusage/

- Long-Term dataset：https://www.cs.helsinki.fi/group/carat/data-sharing/

Journal SI Activities

- IEEE JSAC SI Artificial Intelligence and Machine Learning for Networking and Communications.
  - Status: Publishing the papers.
  - Another SI about AI for Wireless Phy Layer.
- ACM Transactions on Intelligent Systems and Technology Special Issue on "Deep Learning for Spatio-Temporal Data"
  - September 30, 2020: Deadline for paper submissions
  - December 31, 2020: First round review decisions
  - January 31, 2021: Deadline for revised manuscripts
  - March 31, 2021: Notification of final decisions
  - Aprial 20, 2021: Publication materials due
  - Guest Editor*: Senzhang Wang, Yong Li*

Upcoming
Workshop Proposal Submission

- 2020 Globecom Workshop (Taipei)

- 2021 ICC Workshop (TBD)

Other Activities Plan

- **Propose Workshops**
  - IEEE conference of GLOBECOM, INFOCOM, etc.
- **Propose Special Issues**
  - IEEE IEEE Trans. on Cognitive Network, Trans. On Big Data, IEEE Communications Mag., Signal Processing Mag., etc.
- **Organizing regular meetings**
- **Invitation talks from this area**
- **Building data-sharing community and organize competitions**:
- [Maintain IEEE TCCN D2CN SIG Website:](#)
- https://www.linkedin.com/groups/13516608/profile

Thanks!