



Social Button: A Case System for Social Control-and-Use of IoT Devices in Public Spaces

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DATE 29 May, 2023 (Mon)

TIME 4:00 PM - 5:00 PM

VENUE Room 5405, 5/F., Li Dak Sum Yip Yio Chin Academic Building (LI Bldg/AC2), City University of Hong Kong, 83 Tat Chee Avenue, Kowloon Tong, Hong Kong
Zoom:
<https://cityu.zoom.us/j/91766775861>

ABSTRACT

Public spaces are equipped with "public devices", e.g., HVAC, lighting fixtures, speakers, or streaming TV channels to ensure their visitors' comfort. However, many public devices rarely allow visitors to adjust their operation, limiting their utility and fairness across the visitors. Also, the social bar is often too high to speak up about one's preference and attempt to change a device's operation. Social control and use of IoT devices is an underexplored new direction of research even with its huge potential and implication but comes with high complexity and scale. This paper proposes a novel architecture, namely, Social Control-and-Use Architecture for IoT devices, which provides a systematic view and an effective tool to handle the complication and intricacy of system design. It also proposes Social Button, a first-of-a-kind system developed, upon the architecture, for sharing IoT devices in a public space. It transforms an exclusively-controlled device in public space into a true public device, supporting visitors to instantly participate in democratic collective control. Also, a myriad of off-the-shelf devices is easily incorporated without modification to their implementation. The field deployment of Social Button shows its comprehensive service coverage as well as the users' approval of the democratic collective control of public devices.

BIOGRAPHY

Seungchul Lee is a final-year Ph.D. student at the School of Computing, KAIST, under the supervision of Prof. Junehwa Song. His research interest includes social and interactional computing applications and platforms, earables and wearables for human well-being, pervasive IoT systems and robotics, ML-based computing systems and applications, deep learning and computer vision, and context-aware systems and services. He has published several papers at premier academic conferences in CS, including MobiSys, UbiComp, and CSCW. Youngjae Chang is a Ph.D. student at the School of Computing, KAIST. His research interest lies in opening up new possibilities to improve everyday environments where people live and interact with others. His research interest covers the broad areas of machine learning, mobile IoT systems, and service and experience design. His research focuses on building novel intelligent systems and applications that immerse into human life, e.g., wearables, robots, and smart homes.

All are welcome!



In case of questions, please contact Dr Zhicong LU at zhicong.lu@cityu.edu.hk, or visit the CS Departmental Seminar Web at <https://www.cs.cityu.edu.hk/events/cs-seminars/recent-cs-colloquiums>.

