PREFACE

Preface of Special Issue on Data Science Questing for a Better Society

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This special issue contains thirteen original articles on Data Science Questing for a Better Society, which were anonymously reviewed and accepted for presentation at the Annual Interdisciplinary Research Workshop with Economy and Society (CIGS Workshop) [1], sponsored by the Canon Institute for Global Studies, which has been ongoing since 2017.

The CIGS workshop focuses on research topics that apply rapidly evolving information and communication technologies (ICT) to understand economic and social phenomena. In ICT-based economic and social systems, our economic and social activities are frequently recorded on IoT devices and cloud storages. These big data allow us to observe economic and social conditions at high frequency and resolution, to investigate the structure of huge networks of global supply chains and financial systems, and to build realistic models with heterogeneous structures. Interdisciplinary research utilizing Big Data, IoT, and AI is expected to advance the scientific elucidation of economic and social phenomena. The workshop has contributed to building an interdisciplinary research community consisting of physicists, information scientists, mathematicians, economists, political scientists, sociologists, and

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economic practitioners. We would like to thank all the participants for engaging in fruitful, constructive and open exchanges throughout the workshop.

This special issue contains thirteen articles, which can be grouped into six different but closely related categories.

(1) Three articles on "economic globalization": Zelda Marquardt and Yuichi Ikeda analyzed the relationship between migration and gender gap [2]; Ryoji Sato and Takayuki Mizuno studied the spillover effects of economic shocks through supply chains [3]; Joomi Jun and Takayuki Mizuno investigated trade between ethnic groups [4].

(2) Three articles on "marketing science": Kazuki Koyama, Mariko I. Ito, and Takaaki Ohnishi found statistical properties for retail sales [5]; Taizo Horikomi, Mariko I. Ito, and Takaaki Ohnishi clarified the impact of TV commercials on retail sales [6]; Makoto Takeuchi, Soichiro Morishita, and Yukie Sano studied the impact of music subscriptions on consumer identity [7].

(3) Two articles on "firm growth dynamics": Atushi Ishikawa, Takayuki Mizuno, and Shouji Fujimoto reported statistical properties for labor productivity [8]; Shouji Fujimoto, Atushi Ishikawa and Takayuki Mizuno proposed a method for generating synthetic data on firm size variables [9].

(4) One article on "financial time series analysis": Masato Hisakado, Kodai Hattori, and Shintaro Mori estimate the propagation network of shocks across industry sectors by applying a multi-dimensional SENBD process [10].

(5) Two articles on "opinion dynamics": Yunosuke Hori found the role of leaders in opinion formation [11]; Makoto Fujii clarified the effect of friends' network structure on opinion formation [12].

(6) Two articles on "impacts of COVID-19 on the spatial economy": Saki Saito, Mariko I. Ito, and Takaaki Ohnishi proposed a method to estimate the number of bankruptcies using a phone book [13]; Takayuki Mizuno, Akihiro Kobayashi, Daisuke Kamisaka, Yoko Hata, and Atsunori Minamikawa proposed a method to visualize spatial separation of people using smartphone location information [14].

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