



CoCo Seminar Series Spring 2022

Detecting and Forecasting Local Collective Sentiment Using Emojis 😊

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Hybrid (EB-T1 & Zoom; meeting link available on
<http://coco.binghamton.edu/>)

The analysis of collective social sentiment using large-scale data obtained from the Internet, such as social media data, has been actively conducted in recent years, but not many of them considered geographical distributions of sentiments or their spatial dynamics. In this study, we analyzed tweets associated with location information to detect *local* collective sentiment of each prefecture in Japan, especially in response to societal events. To extract positive and negative sentiments, we used *emojis* as language-independent universal indicators of positive/negative sentiments. We found that negative sentiment increased nationwide on the day of a major typhoon hit and after the onset of a COVID-19 pandemic in Japan, while positive sentiment increased around Christmas and the announcement of university or high school admission decisions, with some geographical variations. We also built a linear regression model to forecast the local positive sentiment of a prefecture from other prefectures' past values, which achieved a reasonable predictability with $R^2 = 0.5 \sim 0.6$. Based on the coefficient matrix of this sentiment forecast model, we constructed a causal network of prefecture sentiments in Japan. Interestingly, the relationships among prefectures and their centralities changed significantly before and after the COVID-19 pandemic.

Mei Fukuda is a graduate student in the Department of Mathematical and Computing Science at Tokyo Institute of Technology, Japan, and a Visiting Scholar of CoCo. Her research interests include network modeling and analysis, graph sampling, data science and computational social science.

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