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Crime prediction using social big data and machine learning

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The crime phenomenon of modern society is more complex and diverse than in the past. There are many ways to predict and analyze crime phenomena. The current era of the fourth industrial revolution is experiencing innovative changes as cutting-edge information and communications technology are incorporated into all areas of the economy and society; for example, artificial intelligence (AI), the Internet of Things, big data, and mobile technology. Criminologists (crime-data scientists) play a very important role in this process. They create or assemble high-quality data that can be used to train machine-learning systems, find machine-learning algorithms that are suitable for the data, and perform modeling. The discussions of politics, economy, and culture posted on social media outlets represent the opinions of the era. The method of collecting and analyzing the unstructured data from online channels, including the Social Network Service, can interpret the actual phenomenon in our society. The current study uses structured and social big data to predict crime and preemptively respond to it. The results of this study provides a detailed description of the entire research process, which consisted of gathering big data, analyzing it, and making observations to develop a crime-prediction model that uses actual big data. The study also contains an in-depth discussion of several processes: text mining, which extracts useful information from online documents; opinion mining, which analyzes the emotions contained in documents; machine learning for crime prediction and visualization analysis. Machine learning will be applied to finally suggest a prediction model. The results of the analysis and policy implication will be discussed.

Recent Publications

1. Song J, Song T M and Lee J (2018) Stay alert: Forecasting the risks of sexting in Korea using social big data. Computer in Human Behavior 81:294-301.

2. Song J, Song T M, Seo D-C, Jin D-L and Kim J S (2017) Social Big Data Analysis of Information Spread and Perceived Infection Risk During the 2015 Middle East Respiratory Syndrome Outbreak in South Korea. Cyber psychology, Behavior, and Social Networking 20(1):22-29.

3. Song J, Song T M, Seo D C and Jin J (2016) Data mining of web-based documents on social networking sites that included suicide-related words among Korean adolescents. Journal of Adolescent Health 59(6):668-673.

4. Juyoung Song and Taemin Song (2018) Crime prediction using big data. Bullsbook Publishing Co. Seoul, Korea.

5. Taemin Song and Juyoung Song (2016) Social Big Data Research Methodology with R, Hannarae Publishing Co, Seoul, Korea.

Biography

Juyoung Song is an Assistant Professor of Criminal Justice and Criminology at Pennsylvania State University. She has completed her Bachelors and Master's degrees in the College of Law at Hanyang University in Seoul, South Korea, and her Doctorate degree in Criminal Justice at Michigan State University. Her Career appointments have included an Assistant Professor at the University of West Georgia, and an Associate Researcher at the Korean Institute of Criminology. She has presented at numerous national and international conferences about "Big Data" and published several articles on big data analysis. She has recently published five books about big data analysis in Korean and is currently working on, "Crime Prediction Using Big Data in English."

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