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# Editorial: Data-driven modeling and optimization: Applications to social computing

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## Editorial on the Research Topic

[Data-driven modeling and optimization: Applications to social computing](#)

With the development of computer technology and the exponentially increasing capacity in generating new data, using big data to analyze various problems has become a new norm of research and development. Nowadays, atmospheric science, genomics, biology, remote sensing, medical records, and other fields can generate new data in high-throughput fashion. Big data which has become the characteristics of this era has been integrated into our production and life. Massive data gives rise to challenges as well as opportunities, which promotes the development of new data analysis methods. Data-driven modeling and optimization has become the main method to study practical problems now. Through the analysis of a large amount of data, the underlying patterns and dynamics can be understood much clearer which provide a theoretical basis for promoting the better development of society.

This Research Topic has collected a series of studies on different social problems. Those studies mainly focused on establishing models for solving and prediction based on massive data, for instance, [Li et al.](#) analyze the network characteristics and predicts the popularity of yoga. [Sun et al.](#) establish a new data ownership verification mechanism using  $\Sigma$ -protocol and Pedersen commitment. [Wang et al.](#) predict the future development of EV charging piles in China by clustering methods. [Yuan et al.](#) study the network generated by urban living and working interaction patterns which impacts the formation of urban structure. [Han et al.](#) construct an information dissemination index system from multilevel and complex perspectives. [Bai et al.](#) establish a model for identifying the meteorological elements that affect the vegetation coverage change in China. [Liu et al.](#) propose a strategy of emergency material allocation in uncertain environments. [Qu et al.](#) use visibility graph network to analyze levels of concern about joint punishment for dishonesty.

We also collect some papers on economics and health. Portfolio optimization model, the optimum window of the stock price model and the stand index of the virtual cryptocurrency trading popularity model are established. (Yan et al., Liu et al., Zhu et al. ). For COVID-19, there are three models which calculate the number of infections by COVID-19 tests at the Tokyo Olympics, develop a general modeling to estimate the importation risk of COVID-19 and develop a new tool for local surveillance of the COVID-19 outbreak (Vico Lau et al., Xu et al., Liu et al.). And, Hong Hu et al. establish the model for simulating the transmission route of the African swine fever virus in China. Du et al. reveal the influencing factors of cervix cancer.

Last, this Research Topic has collected the studies on deep learning framework. Zhang et al. propose a model which takes the advance of the graph neural networks and overcomes the data sparsity problem for social recommendation. Li et al. propose CR model for state fragility index. Lin et al. propose methods for vehicle detection and vehicle counting. Song et al. construct NMDRL model for studying propagation, game, and cooperation behaviors in networks. Yang et al. propose an approach for accurately estimating the global and local influence of social networks. Sun et al. introduce the semivariogram into geostatistics and study system robustness for three different dynamical models. Sheng et al. solve the maximization of the dynamic influence in low-dimensional latent space by network representation learning. Li et al. develop a network rewiring mechanism using multi-objective optimization to enhance the robustness of complex networks.

This Research Topic aims to know the development trend of methods that solve important problems based on massive data at present. The source of papers is diverse and data-driven models and optimization are applied to many fields. The authors have established different models for public health, society, machine learning, and economics, and provide efficient reference values for solving complex problems in different fields.

## Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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