

## **Spatio Temporal Modeling in Big Data Era<sup>\*)</sup>**

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**Abstract.** In accordance with technological developments, data can be observed in big data based on location and time, called spatio temporal phenomena, such as data in the field of environment, ecology, hydrology, social, climate, geology, petroleum, etc. We can build the spatio temporal model based on data mining approach using Knowledge Discovery in Database method. In this paper, we developed a study of spatio temporal modeling approach based on multivariate time series analysis, called Generalized Space Time Autoregressive Moving Average (GSTARMA) model. The discussion will be focused on the development of GSTAR stationary and non stationary models with the method of estimating the Ordinary Least Square (OLS) method and the Seemingly Unrelated Regression (SUR) or Autoregressive Conditionally Heteroscedasticity (ARCH) method and the addition of exogenous variables. The models are called: GSTAR-SUR, GSTAR-X, GSTAR-ARCH also GSTARI-X and GSTARI-ARCH. We choose a case study on big data such as Covid-19 pandemic as an illustration of spatio temporal modeling application procedure to real data phenomenon using open source R.

**Keywords:** Spatio Temporal, Data Mining, Big Data, R, GSTAR, Covid-19