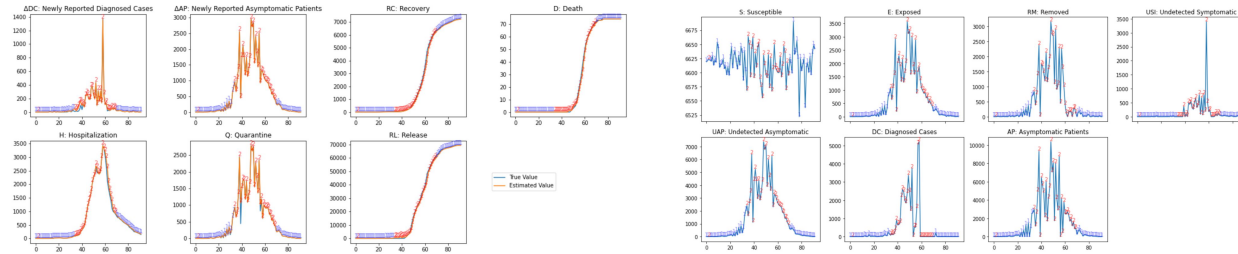


Stochastic Process Modeling

1. Switching Network SEIR State Space Epidemiological Model:

We extend SEIR-SSM model with spatial dependence and switching. We model each compartments in SEIR epidemiological model in terms of a structural component model coupled with a switching hidden Markov process that determines whether a pandemic exists.



2. Gaussian Process State Space Causal Discovery Model:

We introduce Gaussian Process State Space Causal Model, where causality comes not only from observations but also from latent variables. In particular, we consider the dynamics of latent variables with Gaussian process. The MCMC method is used to derive the latent states and an EM framework is proposed for parameter estimation.

