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F O R S C H U N G S P R A X I S

Modeling, Control, and Analysis of the Impact of Domestic Traffic on COVID-19
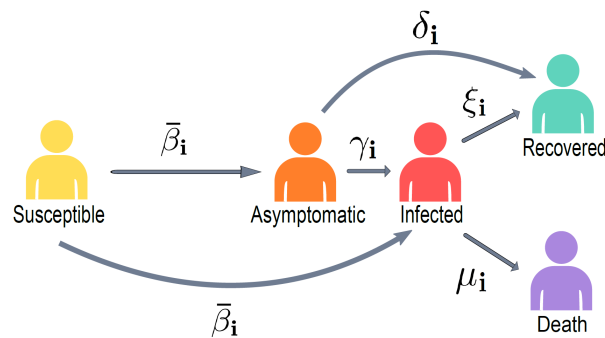
Problem description:

Figure 1: SAIRD Model

As the third wave of COVID-19 pandemic coming, whether to carry out the same lock down as the first two waves is arousing a wide debate. Key questions to this problem are how the traffic helps in propagating the virus, what control effects those measurements bring, and how to choose from measurements according to our expectation of control effects.

In this course, we would like to analyze these questions from a networked control point of view. Given the epidemic spreading regulation as SAIRD models in Fig. 1, the network of transportations should be well considered in building up a network-based spreading model for COVID-19. Based on this model, we will set and solve an optimal control problem regarding balancing the pandemic and the side effects of transportation restrictions.

Work schedule:

- Collect data of the transportation networks and statistics on the COVID-19 pandemic in Germany.
- Rebuild the transportation network and model the epidemics.
- Propose control schemes according to the networked epidemic model.

Bibliography:

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