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Feedback control of epidemic models using Hamilton-Jacobi-Bellman equation

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In this research, we study feedback control problem in the context of deterministic epidemic models. Feedback control is obtained by solving Hamilton-Jacobi-Bellman(HJB) equation, which is employed to overcome limitations of previous work. There are three key factors in the implementation of this methodology, decoupling value function and control variables, truncation of unbounded domain, and numerical solver for 1st order hyperbolic PDE. While this approach seems complicated, it has an obvious advantage in generalization to stochastic optimal control problem. With proper treatments for technical challenges, we provide a tool that can be widely applied.

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