Diffusion process in civil infrastructure network

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In a civil infrastructure system, failure in one component can cause failures in other components resulting in a cascading failure. We evaluate the transmission of the failures among components by considering the infrastructure system as a complex network, where nodes represent the components and edges represent the relationships among the components. Whether and how things diffuse from one network component to another depends on several factors, e.g., timing in diffusion, and interaction among different nodes.
In this study, we conduct an extensive simulation study and investigate how the network structure, in particular, the local geometry of the network, affects the transmission or diffusion process. In a case study, we evaluate the resilience of real-world power grids under cascading failure generated by diffusion processes.