

Data Science and Machine Learning Seminar Series

Tuesday 2nd February 2021 6:00pm KT220

Virtual Presentation: <https://purdue.webex.com/meet/aselvite>



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Understanding and tracking COVID-19 outbreaks with Bayesian inference

Policy responses to the COVID-19 pandemic are complicated by unknowns in the dynamics and status of the outbreak across populations. This talk covers a set of projects which use modeling and Bayesian inference to extract information from noisy and coarse-grained data sources, helping to inform policy. First, I will present an agent-based model for COVID-19 outbreak dynamics. Inferring unknown population-level parameters this model allows us to uncover between-population heterogeneities in COVID-19 outbreaks across several early hotspots. Second, I will show an application of this model to evaluate strategies for population screening. This analysis demonstrates that the frequency of testing and turn-around time are far more important than test sensitivity for containing spread. Finally, I will discuss the development of stochastic variational inference techniques to track the growth of an outbreak in real time when infections can be only partially and noisily observed.

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