

# Health Applications Society Online Seminar Series



*Associate Professor of  
Data Science &  
Operations*

**Vishal Gupta**

USC Marshall School of  
Business

**June 24, 2022 (Friday)**  
1-2 pm Eastern Time  
10-11 am Pacific Time

**Zoom Webinar**  
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## Project Eva: Designing and Deploying the Greek COVID-19 Testing System

**Abstract:** On July 1st, 2020, members of the European Union gradually lifted earlier COVID-19 restrictions on non-essential travel. In response, we designed and deployed “Eva” – a novel reinforcement learning system – across all Greek borders to identify asymptomatic travelers infected with SARS-CoV-2. Eva allocates Greece’s limited testing resources based on demographic characteristics and results from previously tested travelers to (i) limit the influx of new cases and (ii) provide real-time estimates of COVID-19 prevalence to inform border policies. Counterfactual analysis shows that Eva identified 1.85x as many asymptomatic, infected travelers as random surveillance testing, with up to 2-4x as many during peak travel. Moreover, Eva identified approximately 1.25-1.45x as many infected travelers as policies that require similar infrastructure as Eva, but make allocations based on population-level epidemiological metrics (cases/deaths/positivity rates) rather than reinforcement learning. This talk discusses some of the main design decisions behind Eva, the key elements of the reinforcement learning algorithm, and the measured impact of the system in the summer of 2020.

**Bio:** Vishal Gupta is an Associate Professor of Data Sciences and Operations at the USC Marshall School of Business. He completed his Ph.D. in Operations Research at MIT in 2014. Vishal’s research focuses on data-driven decision-making and optimization, particularly in settings where data are scarce. Such settings are common in applications that rely on personalization (like precision healthcare) and real-time decision-making (like risk management). Consequently, his research spans a wide variety of areas including revenue management, education, healthcare, and artificial intelligence. Vishal has received a number of recognitions for his work, including the Wagner Prize for Excellence in the Practice of Advanced Analytics and Operations Research, the Pierskalla Best Paper Prize, the Jagdish Sheth Impact of Research on Practice Award.