DATA SCIENCE INSTITUTE



Thursday May 13th, 4:30-5:30 via Zoom (click to join)



"Approximate Bayesian computation (ABC) for railway track geometry parameter estimation" — *Prof. Nii Attoh-Okine, Ph.D., P.E., F.ASCE,* Dept. of Civil and Environmental Engineering, University of Delaware The quality of track geometry is directly linked to vehicle safety, reliability and riv

The quality of track geometry is directly linked to vehicle safety, reliability and ride quality. Deviations in track geometry from specifications due to loads and continuous usage may hinder performance and violate limits. Information obtained from the analysis of track geometry data can inform the prompt application of preventive and corrective maintenance measures like tamping, to increase the lifespan of the track and maintain higher train speeds, Bayesian statistical

methods have been applied to model track degradation. However, most models rely on likelihood functions which are intractable to compute. In this talk we will discuss Approximate Bayesian Computation (ABC), a likelihood-free method, in estimating Track Quality Indices (TQIs) which are essential for track degradation modeling. ABC relies on techniques such as rejection sampling and Markov Chain Monte Carlo (MCMC). (Joint work with Grace Ashley, Ph.D. candidate in Civil Engingeering at UD)