Health Applications Society
Online Seminar Series

Proctor & Gamble Bascom Professor of Industrial and Systems Engineering

Oguzhan Alagoz

University of Wisconsin-Madison

May 27, 2022 (Friday)
1-2 pm Eastern Time
10-11 am Pacific Time

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Stochastic Modeling to Personalize Cancer Screening

Abstract: This talk describes the use of partially observable Markov decision processes (POMDPs) for personalizing cancer screening. POMDP models can be used to address several controversial open research questions in cancer screening, such as when to start and stop screening and how often to screen. We demonstrate the development and application of a POMDP-based personalized cancer screening policy using breast cancer as an example. In addition, we briefly describe how nonadherence to the screening recommendations, limited screening resources, and existence of chronic conditions could be addressed using the POMDP modeling framework. Finally, we describe successful POMDP applications in other cancers including personalizing colorectal and lung cancer screening.

Bio: Oguzhan Alagoz is Proctor & Gamble Bascom Professor of Industrial and Systems Engineering at the University of Wisconsin-Madison, and also serves as the director of NIH-funded Institute for Clinical and Translational Research (ICTR)-Simulation Center. His research interests include stochastic optimization, medical decision making, completely and partially observable Markov decision processes, simulation, risk-prediction modeling and health technology assessment. He is co-leading the University of Wisconsin Breast Cancer Simulation Model, a member of the National Cancer Institute's Cancer Intervention and Surveillance Modeling Network. He is currently serving as the editor-in-chief of IISE Transactions on Healthcare Systems Engineering and associate editor for Operations Research. He has received various awards including a CAREER award from National Science Foundation (NSF), outstanding young industrial engineer in education award from IISE, Dantzig Dissertation Honorable Mention Award from INFORMS.

This seminar series is supported by INFORMS Healthcare Applications Society and organized by Sanjay Mehrotra (Northwestern University), Sait Tunc (Virginia Tech), and Qiushi Chen (Pennsylvania State University). If you have any questions, please contact us at hasseminarseries@gmail.com!