INDUSTRIAL & SYSTEMS ENGINEERING SEMINAR

Wednesday, April 25
3:15 PM – Refreshments before the seminar
3:30 PM – Graduate Seminar
Mechanical Engineering Room 4125 A & B

Forecasting and Control Algorithms to Improve Monitoring of Glaucoma Progression

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Chronic illnesses, such as glaucoma, are long lasting and affect almost one out of every two adults in the US. In monitoring these patients, there is often a clear tradeoff between monitoring intervals that are too short and too long. This work develops dynamic state space prediction models of disease state in combination with measures of likelihood of disease progression to determine "time to next test". We derive structural properties of our algorithms. Models are validated on data from a large multi-center clinical trial (the Collaborative Initial Glaucoma Treatment Study – CIGTS) which provides test results for over 600 glaucoma patients over a 7-10 year time frame.

BIO: Mariel Lavieri is an Assistant Professor in the Department of Industrial and Operations Engineering at the University of Michigan. She has bachelor's degrees in both Industrial and Systems Engineering and Statistics and a minor in String Bass Performance from the University of Florida. She also holds a Masters and PhD in Management Science from the University of British Columbia. In her work, Mariel applies operations research to healthcare and public policy topics. Her most recent research focuses on medical decision making, in particular on determining optimal screening, monitoring and treatment protocols by explicitly modeling stochastic disease progression. She has also developed extensive models for health workforce planning. Mariel is the recipient of the Bonder Scholarship, the Pierskalla Best Paper Award and a honorary mention in the George B. Dantzig Dissertation Award.

FOR MORE INFORMATION ON PROFESSOR LAVIERI'S RESEARCH, PLEASE VISIT: http://ioe.engin.umich.edu/people/fac/lavieri.php