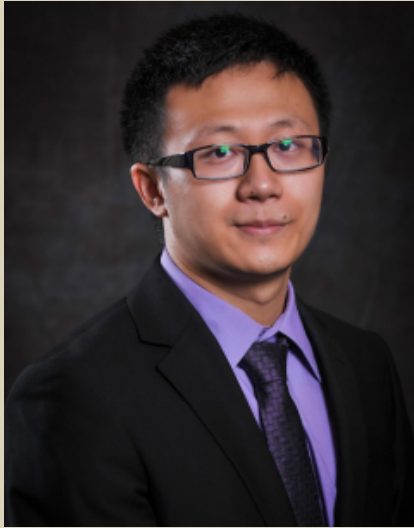


Disease Prediction in the Digital Age: Collaborative Learning and Rule-based Methods



Biography

Dr. Shuai Huang is an Associate Professor at the Department of Industrial & Systems Engineering at the University of Washington. He received a B.S. degree on Statistics from the School of Gifted Young at the University of Science and Technology of China in 2007 and a Ph.D. degree on Industrial Engineering from the Arizona State University in 2012. His research focuses on data analytics and AI challenges with a particular interest on real-world problems such as healthcare and transportation. His research has been funded by the NSF, NIH, DARPA, AFOSR, Juvenile Diabetes Research Foundation (JDRF), and several other research institutes and foundations. Dr. Huang currently serves as Associate Editor for the IISE Transactions in Healthcare Systems Engineering and INFORMS Journal of Data Science.

Dr. Shuai Huang

Date: Jan 09, 2024

Time: 1:30 pm - 2:20pm

Location: LOWE 112

Abstract

Technologies such as genomics, imaging, smartphones and wearable devices, have been digitalizing healthcare and transforming it from episodic, reactive care for patients to timely disease prevention and health improvement of individuals and communities. Correspondingly, risk prediction has become a foundational pillar in this new vision of healthcare and taken up a new character. In this talk, I will use Type 1 Diabetes as an example and give a historic account of this journey working with many of my students and collaborators on two methodological frameworks to build a new generation of disease prediction models: the collaborative learning (for personalization and diversification of the models) and rule-based methods (for discovery of novel, multi-modal biomarkers to enrich the models). Our recent results also show how to extend these methods to respond to emerging AI ethics issues such as interpretability, disparity, fairness and equity. I will conclude my talk with some future research directions, inspired by the still largely untapped potential of this ongoing digital transformation of healthcare and some recent experimental applications such as digital twins and metaverse in mental health and cancer that have been attracting people to reimagine the future of healthcare in this digital new world.