

EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

A Chance Constrained Programming Framework to Handle Uncertainties in Radiation Therapy Treatment Planning

ABSTRACT - Radiation therapy is a non-invasive treatment modality for cancer patients. Radiation therapy treatment planning for cancer patients provides many challenging optimization problems. In this talk, I will introduce a chance-constrained programming (CCP) framework for radiation therapy treatment planning taking into account uncertainties that are associated with patients as well as the device to deliver radiation. For the cases that the probability distribution of the random radiation dose contribution is not completely specified, but is only known to belong to a given class of distributions, an explicit convex condition is provided that guarantees the satisfaction of the probabilistic treatment planning constraints for any realization of the distribution within the given class. This novel perspective gives an insight into the trade-off between sufficient tumor coverage and sparing the healthy tissues under uncertainty, while allowing users to develop an appropriate plan for the treatment. This is a joint work with MD Anderson Cancer Center, Houston, TX...



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SPEAKER BIO – Gino Lim is a professor and R. Larry and Gerlene (Gerri) R. Snider Endowed Chair of the Department of Industrial Engineering at the University of Houston (UH). He is a fellow of the Institute of Industrial and Systems Engineers (IISE) and serves as an editorial board member for several scientific journals. He is currently a Board Member of the IISE Board of Trustees, the Senior Vice President of International Operations of IISE, and holds several other positions such as a member of the Council of Industrial Engineering and Department Heads (CIEADH) and a founding member of the IISE Fellows Council on International Ambassadors Committee. Previously, he served as a member of the Board of Directors of INFORMS, Co-Chair of INFORMS Subdivisions Council, Vice President of Chapters/Fora of INFORMS, Chair of INFORMS Chapters/Fora Committee, the program chair for the 2017 INFORMS annual conference, the program chair of 2012 ISERC Conference, to name a few. His research areas include mathematical optimization, computational algorithm design, Operations Research applications in community resilience, homeland security, power systems, healthcare delivery, and transportation. He has authored over 160 archival papers and delivered numerous invited talks for plenary, colloquia, seminars, and technical presentations at international conferences and universities. He received both his M.S. and Ph.D. degrees in industrial engineering from University of Wisconsin – Madison.

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TUESDAY, MARCH 28, 2023

3:30 PM – 4:50 PM

USC ANDRUS GERONTOLOGY CENTER (GER), Room 206