Specialized Panel Discussion Title:

Control Engineering and Systems Biology: Modeling and Control

Wednesday, November 6, 2024
17:00 – 18:30

Introduction:

Control engineering and systems biology, as two challenging and influential fields, have recently unlocked numerous opportunities for tackling complex biological issues. This session will delve into modern innovations and approaches in integrating mathematical and computational models, along with machine learning, to control biological systems. Experts will analyze the challenges and strategies in control engineering for disease modeling and control, optimizing treatment rates, and leveraging real-time data. These interactions create a bridge between data science, biology, and control engineering, fostering advanced solutions in personalized medicine and biotechnology.

Panel Discussion Questions:

1. How can mathematical modeling and machine learning be utilized to analyze and predict the behavior of complex biological systems?
2. How can agent-based models and intelligent controllers effectively manage and control complex diseases, such as epidemics and tumor growth?
3. What challenges and opportunities exist in real-time parameter estimation and leveraging big data (e.g., genomics and proteomics) for precision medicine and personalized treatments?
4. How can the integration of computational tools with biological data and protein networks optimize therapeutic strategies and aid in drug discovery?
5. What role does systems biology play in the future of personalized medicine and its applications in healthcare and pharmaceuticals?
6. How can researchers from different fields (biology, mathematics, data science, etc.) collaborate effectively in systems biology?

Panel Members:

- Dr. Jafar Ghaisari (Isfahan University of Technology)
- Dr. Mohammad Kohandel (University of Waterloo)
- Dr. Mohsen Shafieirad (University of Kashan)
- Dr. Sadjaad Ozgoli (Tarbiat Modares University)




Panel Chair:
Dr. Jafar Ghaisari