

Themes of Distinguished Lecture Program by Tadahiko Murata

1st Talk Theme:

Multi- and Many-Objective Optimizations Using Evolutionary Computation Methods

Abstract:

In the complex world, we are facing challenges with multiple objectives to be tackled. In multi-objective optimization problems, an optimization method tries to find a set of non-dominated solutions rather than a single solution. When the number of objectives becomes many, the diversity of non-dominated becomes high. In those problems, it is important the proximity and the diversity to/on the true Pareto solutions. Evolutionary computation is known as one of good optimization methods that find better sets of non-dominated solutions. In this talk, the lecturer gives the fundamental knowledge in evolutionary computation methods for many-objective optimization problems and current applications in this research area.

2nd Talk Theme:

Real-Scale Social Simulations Using Societal Synthetic Populations in Digital Twin

Abstract:

It is essential for researchers to consider human factors in real-scale social simulations that take into account people living and working in target communities. In order to do so, researchers need to know attributes of living and working people such as age, sex, race, living place, occupation, income and workplace. However, those attributes are a kind of privacy data that are not available to researchers. To tackle with such difficulty in accessibility, data synthesis is getting attentions recently. Data synthesis is a method to synthesize data based on the statistical characteristics of collected data. The lecturer gives a talk how to synthesize the population data using statistics, and several applications of synthesized population data in real-scale social simulations including COVID-19 counter-measures.