

کارگاه نظریه نایقینی و بهینه سازی

این کارگاه به موازات پانزدهمین کنفرانس انجمن ایرانی تحقیق در عملیات برگزار می شود. در این کارگاه، چهار نفر از پژوهشگران این رشته در باره نظریه نایقینی (Uncertainty Theory) و کاربردهای آن، آخرین تحقیقات خود را ارائه داده و دیدگاه جدیدی را در مواجهه با عدم قطعیت موجود در مسایل مختلف را بیان می کنند. سخنرانان کنفرانس به همراه موضوع سخنرانی و خلاصه ای از سخنرانی را در ادامه مشاهده کنید. این کارگاه به صورت مجازی برگزار می شود و زمان دقیق و نحوه شرکت در کارگاه متعاقباً اعلام می شود.

Uncertainty Theory and its application

This workshop will be held in parallel with the 15th International Conference of The Iranian Operations Research Society. In this workshop, four researchers in the field present their latest research on Uncertainty Theory and its applications and open a new point of view on facing uncertainty in various issues. The scholars and the topic of the speech, and a summary of the speech can be seen below. This workshop will be a webinar, and the exact time and how to participate in the workshop will be announced soon.

Title: Network Analysis and Optimization Modelling under Uncertainty but Non-randomness
Professor Jin PENG
Huanggang Normal University, Hubei, China.

Abstract: Network optimization problems usually take place in uncertain environment. In this talk, I will introduce uncertain network optimization modelling based on belief degree and big data with means of uncertainty theory. The presentation includes five parts: (1) What is the uncertain network optimization problem? Some background information about this research will be talked about. (2) Why should we use the tool of uncertainty theory but not probability theory in uncertain network optimization? The reasons that why belief degree in network optimization is needed are explained. (3) How to model uncertain network optimization problem and how to solve the models? In this part, three types of uncertain programming models are presented. A hybrid intelligent algorithm for solving the models in general cases is suggested. (4) Which progresses have been made in uncertain network optimization? (5) Some concluding remarks are given to address several further issues.



Title: Uncertain Quantitative Finance theory

Professor Xiaowei Chen

Nankai university, Tianjin, China

Abstract: The talk will include uncertainty analysis, uncertainty differential equations, and their applications in uncertain financial engineering, including the uncertain stock model, uncertain interest rate model, and uncertain currency model. Further, based on the principle of equilibrium pricing, the pricing of financial derivatives such as European options, American options, Asian options, zero coupon bonds, interest rate ceilings, and interest rate floor will be introduced. The research progress of estimation methods of unknown parameters in uncertain differential equations will be combined with financial market data.



Title: On the Shortest Path Problem of Uncertain Random Digraphs

Professor Hao Li

Renmin University of China

Abstract: In the field of graph theory, the shortest path problem is one of the most significant problems. However, since varieties of indetermined factors appear in complex networks, determining of the shortest path from one vertex to another in complex networks may be a lot more complicated than the cases in deterministic networks. To illustrate this problem, the model of uncertain random digraph will be proposed via chance theory, in which some arcs exist with degrees in probability measure and others exist with degrees in uncertain measure. The main focus of this paper is to investigate the main properties of the shortest path in uncertain random digraph. Methods and algorithms are designed to calculate the distribution of the shortest path more efficiently. Besides, some numerical examples are presented to show the efficiency of these methods and algorithms.



Title: Uncertain Statistics and Regression Analysis

Dr. Waichon Lio

School of Reliability and Systems Engineering Beihang University

Abstract: Uncertain statistics is a set of mathematical techniques for collecting, analyzing and interpreting data by uncertainty theory. The study of uncertain statistics was started by professor Baoding Liu in 2010 and followed by many researchers. Nowadays, uncertain statistics has achieved fruitful results in both theory and practice. As an important application of uncertain statistics, uncertain regression analysis is a set of statistical techniques that use uncertainty theory to explore the relationship between explanatory variables and response variables. In this talk, a preface of uncertain statistics and its application in regression analysis will be reviewed.

