

Preface

This edited volume contains papers that are an outgrowth of the 15th International Conference on "Game Theory and Management" held in Saint Petersburg, Russia, in June 23–25, 2021 with a few additional contributed papers. These papers present an outlook of the current development of theory of games and its applications to management in various domains, in particular, finance, mechanism design, supply chains, environment and economics.

More than 110 participants from 30 countries had an opportunity to make presentations on a wide range of game-theoretic models, both theory and management applications. It is necessary to mention that the conference is being held in an online format and without a registration fee. Plenary presentations were delivered by Professor Robert J. Aumann (2005 Nobel Laureate in Economics), Hebrew University, Israel, Professor David W.K. Yeung, Hong Kong, Shue Yan University, Hong Kong, Professor Ehud Kalai, Northwestern University, Kellogg School of Management, USA, Professor Leon Petrosyan, Saint Petersburg State University, Saint Petersburg, Russia. It is interesting to mention that Professor Robert Aumann, Professor David Yeung and Professor Leon Petrosyan were plenary speakers also on the first international conference "Game Theory and Management" held in Saint Petersburg in 2007.

The importance of strategic behavior in the human and social world is increasingly recognized in theory and practice. As a result, game theory has emerged as a fundamental instrument in pure and applied research. The discipline of game theory studies decision making in an interactive environment. It draws on mathematics, statistics, operations research, computer science, engineering, biology, economics, political science and other subjects. In canonical form, a game takes place when an individual pursues an objective(s) in a situation in which other individuals concurrently pursue other (possibly conflicting, possibly overlapping) objectives and in the same time the objectives cannot be reached by individual actions of one decision maker. The problem is then to determine each individual's optimal decision, how these decisions interact to produce equilibrium, and the properties of such outcomes. The foundations of game theory were laid more than seventy-five years ago by von Neumann and Morgenstern (1944).

Theoretical research and applications in games are proceeding apace, in areas ranging from aircraft and missile control to inventory management, market development, natural resources extraction, competition policy, negotiation techniques, artificial intelligence, data mining, macroeconomic and environmental planning, multi-agent systems, capital accumulation and investment.

In all these areas, game theory is perhaps the most sophisticated and fertile paradigm applied mathematics can offer to study and analyze decision making under real world conditions. The papers presented at this Fifteenth International Conference on Game Theory and Management certainly reflect both the maturity and the vitality of modern day game theory and management science in general, and of dynamic games, in particular. The maturity can be seen from the sophistication of the theorems, proofs, methods and numerical algorithms contained in the most of the papers in these contributions. The vitality is manifested by the range

of new ideas, new applications, the growing number of young researchers and the expanding worldwide coverage of research centers and institutes from whence the contributions originated.

The contributions demonstrate that GTM2021 offered an interactive program on wide range of latest developments in game theory and management. It includes recent advances in topics with high future potential and exiting developments in classical fields.

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