An Inverse Optimization Approach to Stabilizing Grand Cooperation via Cost Adjustment

by

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Date: 5 May 2020 (Tuesday)
Time: 2:30pm - 3:30pm

Online Session in Blackboard*: Research Seminar by Prof. Zhou XU

*This online session is open to students who registered LGT611/6112/6113/6114 Research Seminars in Logistics I/II/III/IV only.
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(Conducted in English)

Abstract:

In this talk, I will present our recent study that bridges two research areas, namely cooperative game theory and inverse optimization. Cooperative game theory is concerned with the collaborative decision of multiple decision makers. Ideally, if all decision makers collaborate to form a grand coalition, it will lead to a centralized optimal decision with the best payoff to all decision makers, which is the minimum total cost in the context of cost minimization. However, many cooperative games are known to have an empty core, so that their grand coalitions are not stable. Following a natural approach of inverse optimization, we propose a new instrument, referred to as cost adjustment, for stabilizing the grand coalition that enables cooperation among all players of a cooperative game. For the newly proposed instrument, we develop novel solution methods based on two linear programming formulations, and demonstrate their effectiveness using applications on two well-known cooperative games.

Bio:

Dr. Zhou Xu is currently a Professor in the Department of Logistics and Maritime Studies, Faculty of Business, Hong Kong Polytechnic University. His research mainly focuses on the application of operations research and computer science techniques to problems in logistics, transportation, shipping and supply chain management. His research has appeared in premier journals, including Operations Research, INFORMS Journal on Computing, Transportation Science, and Transportation Research Part B.

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All PolyU staff and students are welcome!