Variational Inequalities in Multi-Leader-Multi-Follower Game Approximations

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Abstract

In problems associated to Multi-Leader-Multi-Follower games, solutions may not exist, particularly when leaders exhibit a pessimistic behavior. To address this limitation, we introduce *approximate* and *viscosity* solutions constructed using suitable *approximate* Nash equilibria of the second stage game. Specifically, the parametric followers Nash equilibrium problem of the second stage is approximated by using Minty variational inequalities or classical variational inequalities and it is shown, among others, that *approximate* and *viscosity* solutions of the pessimistic Multi-Leader-Multi-Follower problem exist under not restrictive assumptions when Minty's variational inequalities are used.
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