**Title:** Optimal Private Payoff Manipulation against Commitment in Extensive-form Games

**Abstract:** To take advantage of strategy commitment, a useful tactic of playing games, a leader must learn enough information about the follower's payoff function. However, this leaves the follower a chance to provide fake information and influence the final game outcome. Through a carefully contrived payoff function misreported to the learning leader, the follower may induce an outcome that benefits him more, compared to the ones when he truthfully behaves.

We study the follower's optimal manipulation via such strategic behaviors in extensive-form games. Followers' different attitudes are taken into account. An optimistic follower maximizes his true utility among all game outcomes that can be induced by some payoff function. A pessimistic follower only considers misreporting payoff functions that induce a unique game outcome. For all the settings considered in this paper, we characterize all the possible game outcomes that can be induced successfully. We show that it is polynomial-time tractable for the follower to find the optimal way of misreporting his private payoff information. Our work completely resolves this follower's optimal manipulation problem on an extensive-form game tree.

**Bio:**

Yurong Chen is a third-year PhD student from school of computer science, Peking University, advised by Prof. Xiaotie Deng. Prior to that, she obtained her bachelor degree in mathematics from Hua Luogeng Class, Shenyuan Honors of College, Beihang University. She is interested in problems at the interface of computer science and economics. Currently, she focuses on players' strategic behaviors due to information asymmetry, with reflection on the non-realistic assumptions of classic game theory.