Extensive-Form Games

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Previously ... on multi-agent systems (tutorials and lectures).

1. Different representations:
   - Normal-Form Games (game matrixes)
   - Extensive-Form Games (game trees)
2. Algorithms for computing different solution concepts:
   - Nash equilibrium
   - Correlated equilibrium
   - Stackelberg equilibrium

Task 1: Consider following games. Write down a normal-form representation for these games.
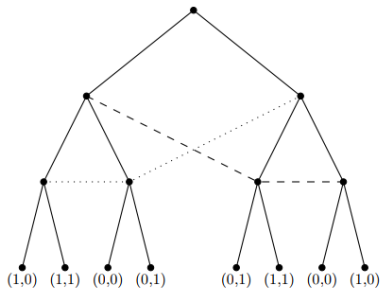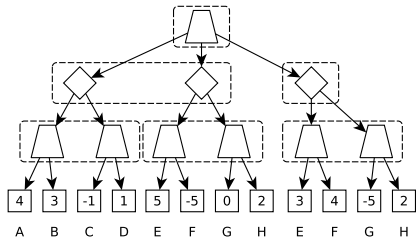
Task 2: Formulate the following game of a small "poker" as an EFG.

- there is an ante of 1$
- there is a limited deck of cards $\{J, J, Q, Q\}$
- each player receives a card
- player 1 either folds or bets 2$
- player 2 either calls or folds
- player with the higher card wins

Task 3: A *mixed-integer linear program (MILP)* is a linear program that includes integer variables. Formulate the problem of computing a NE in a general-sum game as a MILP.

Task 4: Either prove the following statement or give a counterexample: Every convex combination of two different NE is a Correlated equilibrium.

Task 5: Find a Correlated equilibrium that is not a convex combination of NE.