A Combinatorial Characterization of Minimax in 0/1 Games

Abstract:

We will discuss a generalization of the celebrated Minimax Theorem (von Neumann, 1928) for binary zero-sum games. A simple game which fails to satisfy Minimax is Ephraim Kishon’s “Jewish Poker” (see [1,2] below). In this game, each player picks a number and the larger number wins. The payoff matrix in this game is *infinite triangular*. We show this is the only obstruction: if a game does not contain triangular submatrices of unbounded sizes then the Minimax Theorem holds. This generalizes von Neumann’s Minimax Theorem by removing requirements of finiteness or compactness. [1] http://www.ephraimkishon.de/en/my_favorite_stories.htm (english) [2] https://gesherfilmfund.org.il/documents/×&amp;#158;×&amp;#145;×V%20x&amp;#153;x&amp;#149;x&amp;#157;%20a&amp;#128;&lt; (hebrew, third story)