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Shiyun Wang* (shiyun.wang@student.csulb.edu), 5979 E Pacific Coast Hwy Apt 7, Long Beach, CA 90803. *Connection between graphical potential games and Markov Random Fields with an extension to Bayesian Networks.*

Abstract: A probabilistic graphical model is a graphical representation of a joint probability distribution, in which the conditional independencies among random variables are specified via an underlying graph. We review the connection between Markov networks and graphical potential games that was given in (Babichenko and Tamuz, 2016), and show how Bayesian networks can be similarly connected to games on directed graphs. In particular, we study the structure of Bayesian networks, define a class of games on directed graphs, and explore the connections between such games and Bayesian networks. In doing so, we show how to construct such games from Bayesian networks and examine properties of this translation. (Received September 24, 2017)