

1139-62-63

Anna Seigal* (seigal@berkeley.edu) and **Guido Montúfar**. *Semialgebraic statistics of mixture models and restricted Boltzmann machines.*

We compare two statistical models of three binary random variables. One is a mixture model and the other is a product of mixtures model called a restricted Boltzmann machine. Although the two models we study look different from their parametrization, we show that they represent the same set of distributions on the interior of the probability simplex, and are equal up to closure. We give a semi-algebraic description of the model in terms of six binomial inequalities and obtain closed form expressions for the maximum likelihood estimates. (Received January 24, 2018)