Sinan G Aksoy* (saksoy@ucsd.edu), Tamara G Kolda and Ali Pinar. Measuring and modeling bipartite graphs with community structure.

We propose a generative model for large-scale bipartite graphs which can be easily tuned to reproduce the characteristics of real-world networks. The characteristics we consider are the degree distributions and the metamorphosis coefficient. The metamorphosis coefficient, a bipartite analogue of the clustering coefficient, is the proportion of length three paths that participate in length four cycles. We further define edge, node, and degree-wise metamorphosis coefficients, enabling a more detailed understanding of bipartite clustering. As demonstrated on several real-world data sets, our proposed bipartite block two-level Erdős-Rényi (BTER) model reproduces both the degree distributions as well as the degree-wise metamorphosis coefficients. (Received February 27, 2017)