Cristina Garcia-Cardona* (cristina.cgarcia@gmail.com), 14245 Dickens St. (#108), Sherman Oaks, CA 91423. Diffuse Interface Models for Semi-Supervised Learning on Graphs: Multiclass Generalizations of the Ginzburg-Landau Functional.

We propose generalizations of a binary diffuse interface model for graph segmentation to the case of multiple classes. The original binary diffuse interface model adapts the Ginzburg-Landau (GL) continuum energy functional to a semi-supervised setup on graphs. The graph structure is used to encode a measure of similarity between data points. A small sample of labeled data points (semi-supervised) serves as seeds from which label information can be propagated throughout the graph structure. We develop two multiclass generalizations, one based on a scalar representation and other based on a vector-field representation. We compare the performance of the two multiclass formulations in synthetic data as well as real benchmark sets, and demonstrate that our experimental results are competitive with the state-of-the-art among other graph-based algorithms. (Received September 01, 2013)