

# UNIVERSITY OF SOUTH FLORIDA

## *Major Research Area Paper Presentation*

*Game Theoretic Unsupervised Learning*

by

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*For the Ph.D. degree in Computer Science & Engineering*

Recently dominant sets, a generalization of the notion of the maximal clique to edge-weighted graphs, have proven to be an effective tool for unsupervised learning and have found applications in different domains. Although, they were initially established using optimization and graph theory concepts, recent work has shown its fascinating connections with evolutionary game theory that leads to the clustering game framework. In this survey, we study the essentials of the clustering game model, and present the difficulties and challenges associated with this model. Also, we report existing solutions to the space and time complexities of clustering using evolutionary game theory by means of graph sparsification and sampling approaches. We also present two important extensions of the clustering game model to situations where higher-order similarities are needed, and multiple similarity matrices are presented.

*August 25, 2016*

*3:00 PM*

*ENB 313*

THE PUBLIC IS INVITED

### *Examining Committee*

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