Submission Summary

Conference Name
2021 IEEE 37th International Conference on Data Engineering (ICDE)

Track Name
Research Paper Second-Round

Paper ID
979

Paper Title
Community Embeddings with Bayesian Gaussian Mixture Model and Variational Inference

Abstract
Graphs, such as social networks, emerge naturally from various real-world situations. Recently, graph embedding methods have gained traction in data science research.
The graph and community embedding algorithm ComE aims to preserve first-, second- and higher-order proximity. ComE requires prior knowledge of the number of communities K. In this paper, ComE is extended to utilize a Bayesian Gaussian mixture model with variational inference for learning community embeddings (ComE BGMM+VI), similar to ComE+. ComE BGMM+VI takes K as the maximum number of communities and drops components through the trade-off hyperparameter weight concentration prior.
The advantage of ComE BGMM+VI over the non-Bayesian ComE for an unknown number of communities K is shown for the small Karate club dataset and explored for the larger DBLP dataset.

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Primary Subject Area
Graphs, RDF, Web Data and Social Networks

Secondary Subject Areas
Data Mining and Knowledge Discovery
Data Science
Machine Learning for Database Systems
Search and Information extraction

Domain Conflicts
fu-berlin.de;uni-passau.de;palantir.com;hse.ru;b10.vc

Submission Questions Response

1. Student paper

Yes

2. Consider for Poster Paper

Yes