

A Unified Framework for Graph Embedding

Two horizontal bars of different shades of blue, one slightly above the other, extending across the width of the slide.

Your names

Data Science Lab
University of Passau

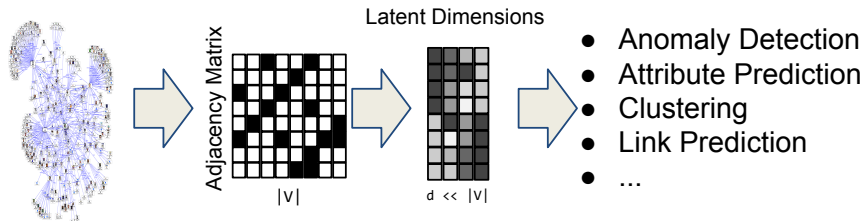
February, 2020

Outline

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Graph Embedding

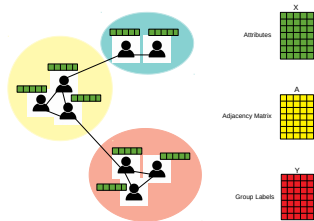


$$\Theta : V \mapsto \mathbb{R}^d$$

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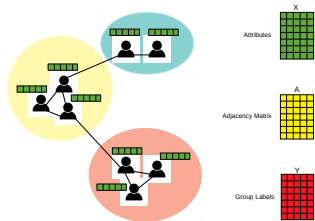
node2vec

use textblock to locate images
you can use pause



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WalkLets

HARP

struc2vec

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Datasets

Table: Statistics of datasets.

Dataset	Nodes	Edges	Attributes	Labels
Cora	2,708	5,429	1,433	7
Citeseer	3,312	4,660	3,703	6

- Cora [1] and Citeseer [1]:
 - The labels indicate publications topics.
 - Attributes are binary representations of words in the corresponding publications.

Link Prediction

explain about Link Prediction

use textblock to adjust images or tables in the frame

example for textblock: k

Node Classification

explain about node classification and compare the baselines
use textblock to adjust images or tables in the frame

example for textblock: k

Node Classification

Table: Node classification performance (Macro-F1 score) of different methods on different datasets.

Dataset	Method	Macro-F1								
		10%	20%	30%	40%	50%	60%	70%	80%	90%
Cora	baseline	0.828	0.841	0.854	0.869	0.883	0.901	0.909	0.916	0.921
	baseline	0.663	0.673	0.684	0.691	0.726	0.754	0.769	0.788	0.808
	baseline	0.733	0.752	0.768	0.773	0.788	0.794	0.806	0.814	0.822
	baseline	0.778	0.795	0.812	0.822	0.837	0.854	0.861	0.869	0.877
	baseline	0.695	0.713	0.729	0.732	0.746	0.767	0.788	0.792	0.806
Citeseer	baseline	0.731	0.739	0.755	0.778	0.786	0.790	0.796	0.804	0.812
	baseline	0.538	0.588	0.607	0.610	0.616	0.621	0.635	0.656	0.677
	baseline	0.577	0.606	0.613	0.619	0.628	0.632	0.638	0.641	0.642
	baseline	0.604	0.633	0.671	0.678	0.696	0.705	0.723	0.735	0.745
	baseline	0.556	0.571	0.614	0.650	0.656	0.662	0.670	0.666	0.682

Cora Visualization

use textblock to adjust images in the frame

example for textblock: k

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Conclusion

- Graph embedding is useful for ...
- We learned ...

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References



Prithviraj Sen, Galileo Namata, Mustafa Bilgic, Lise Getoor, Brian Gallagher, and Tina Eliassi-Rad, "Collective classification in network data", *AI magazine*, 29(3), 93-93, (2008).



Jure Leskovec and Julian J Mcauley, "Learning to discover social circles in ego networks", in *Advances in neural information processing systems*, pp. 539-547, (2012).

Thanks for your attention!