cases	doc_1		doc_2		decision	id
			authors	• Jin-Hee Cho • Shu Hu • Feng Chen • Xujiang Zhao	DUPLICATES	137
	authors	• Xujiang Zhao • Feng Chen • Shu Fen Hu • Jin-Hee Cho	**title**	Uncertainty Aware Semi-Supervised Learning on Graph Data		
	title	Uncertainty Aware Semi-Supervised Learning on Graph Data	**publication_date**	2020-10-24 00:00:00		
	publication_date	2020-01-01 00:00:00	**source**	SupportedSources.PAPERS_WITH_CODE		
	source	SupportedSources.OPENALEX	**journal**			
	journal	Neural Information Processing Systems	**volume**			
	volume	33	**doi**			
	doi	None	**urls**	• https://arxiv.org/pdf/2010.12783v2.pdf • https://github.com/zxj32/uncertainty-GNN • http://proceedings.neurips.cc/paper/2020/file/968c9b4f09cbb7d7925f38aea3484111-Paper.pdf		
	urls	• https://openalex.org/W3100334809	**id**	id-8837223434007219166		
	id	id2405685104729727167	**abstract**	Thanks to graph neural networks (GNNs), semi-supervised node classification has shown the state-of-the-art performance in graph data. However, GNNs have not considered different types of uncertainties associated with class probabilities to minimize risk of increasing misclassification under uncertainty in real life. In this work, we propose a multi-source uncertainty framework using a GNN that reflects various types of predictive uncertainties in both deep learning and belief/evidence theory domains for node classification predictions. By collecting evidence from the given labels of training nodes, the Graph-based Kernel Dirichlet distribution Estimation (GKDE) method is designed for accurately predicting node-level Dirichlet distributions and detecting out-of-distribution (OOD) nodes. We validated the outperformance of our proposed model compared to the state-of-the-art counterparts in terms of misclassification detection and OOD detection based on six real network datasets. We found that dissonance-based detection yielded the best results on misclassification detection while vacuity-based detection was the best for OOD detection. To clarify the reasons behind the results, we provided the theoretical proof that explains the relationships between different types of uncertainties considered in this work.		
	abstract		**versions**			
	versions					