

# Graphical Models in Tikz

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TikZ examples for graphical models (Bayesian networks) and directed factor graphs [1].

Table 1: Node types





Type	Syntax	Output
Latent variable	<code>\node[latent]</code>	
Observed variable	<code>\node[obs]</code>	
Deterministic	<code>\node[det]</code>	
Constant	<code>\node[const]</code>	$a$
Factor	<code>\node[factor]</code>	$\mathcal{N}$ 

Table 2: Edge types

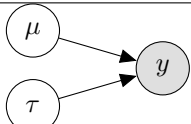
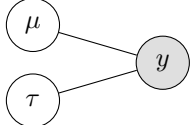
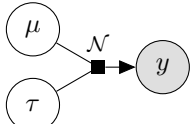
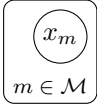
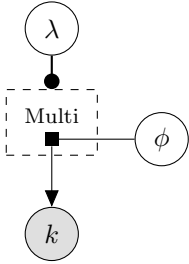
Type	Syntax	Output
Directed edges	<code>\edge[opts]{inputs}{outputs}</code>	
Undirected edges	<code>\edge[-,opts]{inputs}{outputs}</code>	
Factor graph edges	<code>\factoredge[opts]{inputs}{via}{outputs}</code>	

Table 3: Utilities

Type	Syntax	Output
Plate	<code>\plate</code>	
Gate		

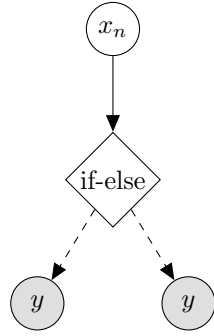


Figure 1: PCA model as a Bayesian network and a directed factor graph.

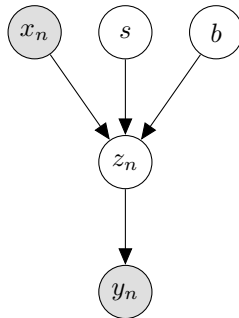


Figure 2: Latent Dirichlet allocation as directed factor graph.

## References

- [1] Laura Dietz, *Directed Factor Graph Notation for Generative Models*. Technical Report. 2010
- [2] Laura Dietz, Steffen Bickel, Tobias Scheffer, *Unsupervised Prediction of Citation Influences*. In: Proceedings of International Conference on Machine Learning. 2007