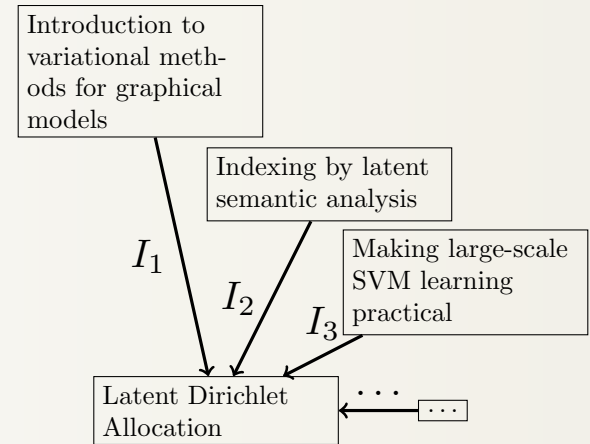
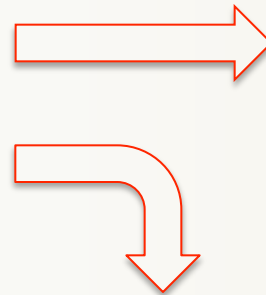
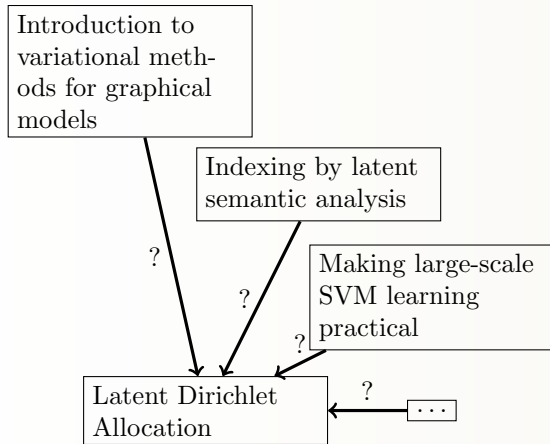


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Original citation network

Annotated citation network

Influence Degree and Aspect				
aspect	I_1	I_2	I_3	...
background	0.1	0.6	0.05	...
solution	0.7	0.1	0.1	...
comparison	0.05	0.3	0.5	...
⋮	⋮	⋮	⋮	⋮

Problems

Detecting influence relationships among graph nodes on different aspects.

Challenges

- Define influence and aspect
- Objectively measure the results
- Use text and structure information of graphs.

Contributions

- Formally define the problem
- Graphical model
- Blocking Gibbs sampling algorithm
- Perform extensive experiments on real data sets (citation network, Twitter).

Models

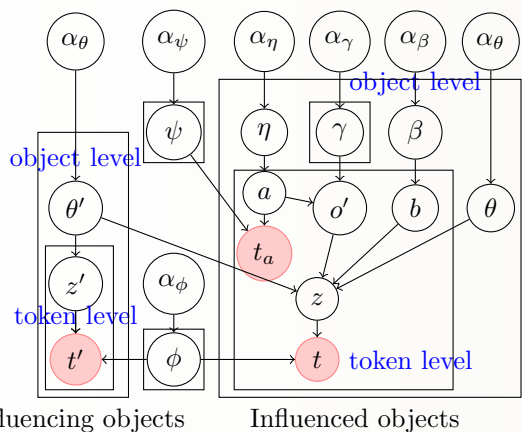


Figure 1: Latent Aspect Influence Model (LAIM)

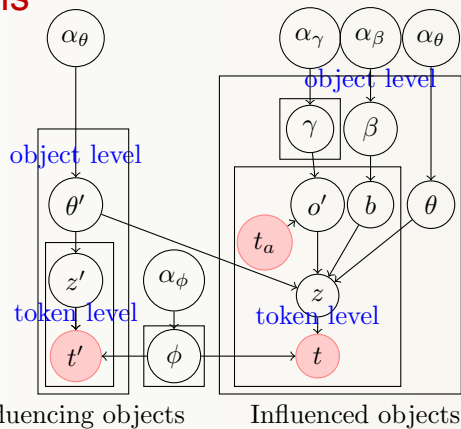


Figure 2: Observed Aspect Influence Model (OAIM)

Definition

Symbol	Meaning
t, t'	Tokens in objects
z, z'	Latent topics in objects
a, t_a	Latent and observed aspects
o, o'	Objects in graph
θ, θ'	Topic distributions
γ	Influencing object distributions
η	Latent aspect Distributions
$\alpha_\theta \dots \alpha_\beta$	Hyper parameters

Results

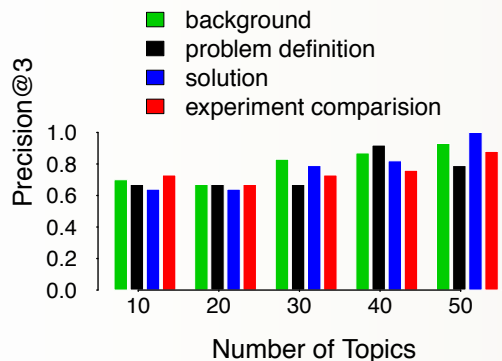


Figure 3: Precision@3 on Citeseer dataset

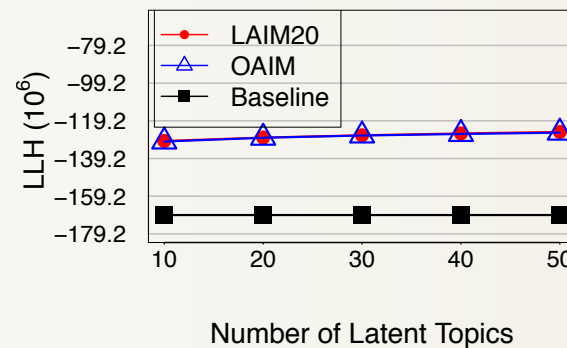


Figure 4: log likelihood comparison on Twitter dataset

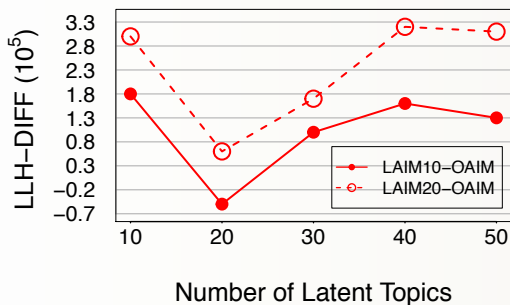


Figure 5: log likelihood comparison on Twitter dataset

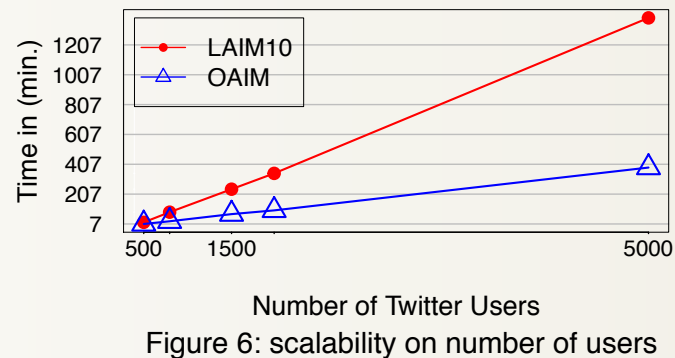


Figure 6: scalability on number of users