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Symmetric Correspondence Topic Models for Multilingual Text Analysis

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Multi-type topic models

- Topic modeling approach has been applied to multi-type data, such as:
  - ✓ text-annotated image data
  - ✓ multilingual aligned text data
- Some prior models fail to capture dependencies between the data types.
- CorrLDA (Correspondence LDA) [Blei et al., 2003] does well with the dependencies; however, it requires an annoying constraint, which requires a ***pivot*** —which data type is generated first— to be specified in advance.

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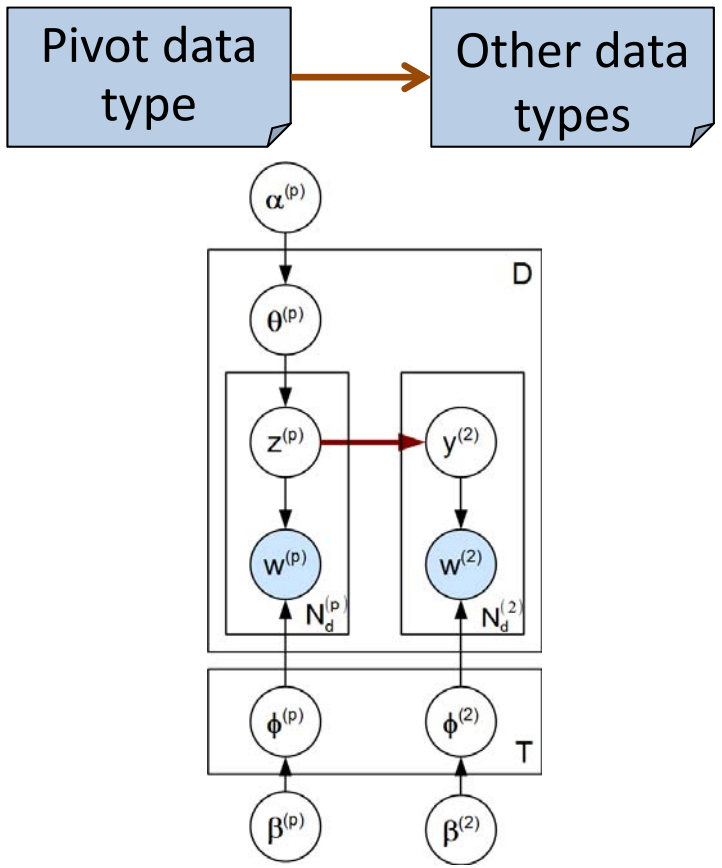
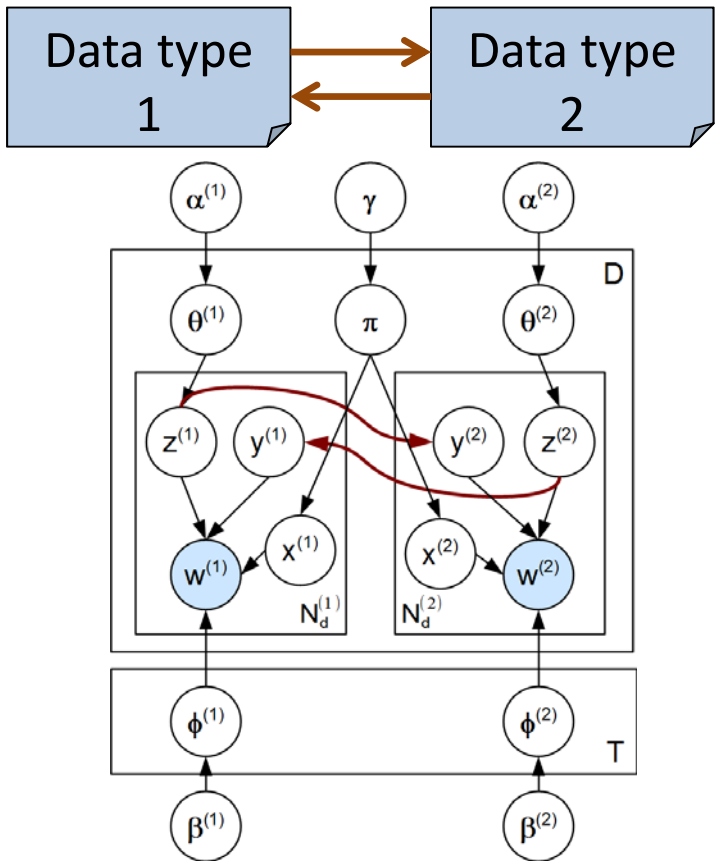
Symmetric Correspondence LDA

- SymCorrLDA can adjust the proportion of the pivot for each data type, using a switch variable.

CorrLDA



SymCorrLDA



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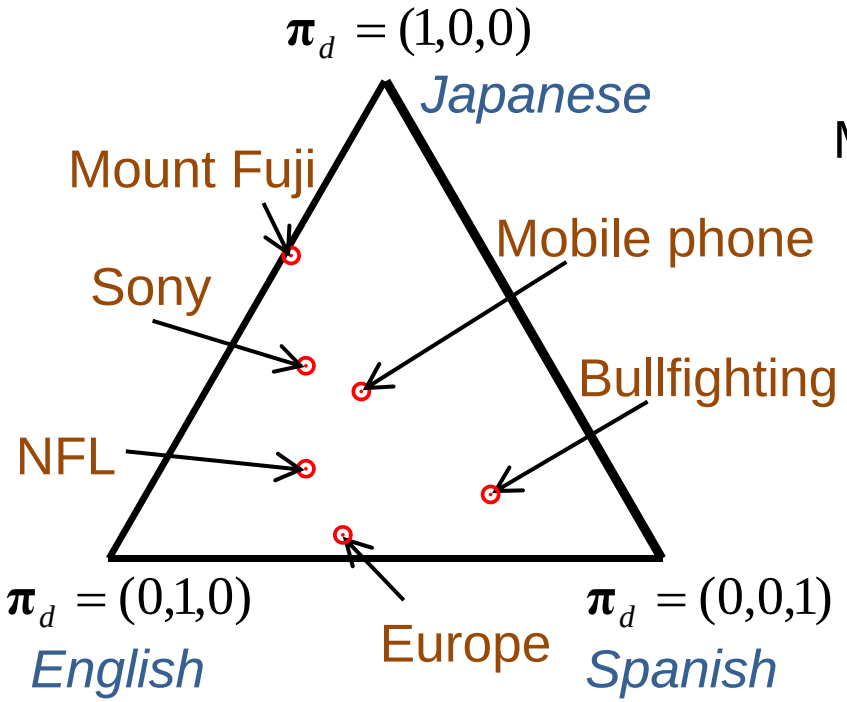
Results



Mean reciprocal rank in finding counter parts.

	Jap to Eng	Eng to Jap
CorrLDA	0.299	0.316
SymCorrLDA	**0.326**	**0.335**

9% improved. 6% improved.

(Both improvements are statistically significant.)

- We experimented with the multilingual aligned text data gathered from *Wikipedia*.
- CorrLDA works significantly more effectively than the other prior models.
- SymCorrLDA is more effective than CorrLDA.