

Traditional Solution

- Set-based models (choose D) → Boolean model
- Ranking models (choose π)
 - Independent loss ← Pointwise
 - Relevance-based loss → { Probabilistic relevance model
Generative Relevance Theory
 - Distance-based loss → { Vector-space Model
Two-stage LM
KL-divergence model
 - Dependent loss ← Pairwise/Listwise
 - MMR loss → Subtopic retrieval model
 - MDR loss

Unsupervised!