Part 4: Future Directions

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Conclusion

- Representation learning learns representations of the data that make it easier to extract useful information when building classifiers or other predictors
- KGs have reached a scale in billions of triples and are evolving all the time → **far from complete!**
  - Link prediction completes missing facts in a single KG
  - Entity alignment finds entities in different KGs denoting the same real-world object

Link prediction	
Translation-based	TransE/TransH/TransR/TransEdge
Bilinear	RESCAL/DistMult/HolE/TuckER
Deep	ConvE/RSN/CompGCN
Non-Euclidean	RotatE/ATTH

Entity alignment	
Structure-based	MTransE/AliNet/HyperKA
Auxiliary information	JAPE/AttrE/MultiKE
Supervised	Calibration/Transformation
Self/co-training	BootEA/KDCoE

- Benchmark datasets and evaluation

Future Directions

- Multi-modal KG representation learning
  - Not only text, but also images, videos …
  - Imbalance between different modals: amount, granularity …
- Incremental KG representation learning
  - KGs should be in accord with the real world
  - Batch vs. streaming
- Long-tail KG representation learning
  - Long-tail entities in popular KGs
  - Long-tail KGs

Thank you for your time!

Questions and comments?

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