

Description. The goal of the hackathon is to build interesting applications using Knowledge Graphs and their embeddings. Follow the steps outlined below.

- Choose a dataset and an application that makes use of the dataset.
- Build a Knowledge Graph from the chosen dataset.
- Use any of the existing KG embedding methods (<https://github.com/uma-pi1/kge>) in the application.

The references section contains material on Knowledge Graphs and their embeddings. A list of sample applications (explanation generation, search ranking, timeline generation, question answering, link prediction, etc.) are given below. If you have any questions, please feel free to contact the volunteers listed below. Submission needs to be made only through the Google form https://docs.google.com/forms/d/e/1FAIpQLSeum0noxmaHKriP508LRAVFEiiMQIXaTwGSKY9c9jBe5TcMJA/viewform?usp=sf_link.

S.No.	KG and KGE technique	Application	Link to the article
1.	Movie KG; new embedding technique	KG is used to explain the (movie, news, etc.) recommendation	https://dl.acm.org/doi/10.1145/3269206.3271739
2.	NYT+Freebase; TransE	Relation extraction	https://aclanthology.org/D13-1136/
3.	GNBR (Global Network of Biomedical Relationships); new embedding technique	Drug repurposing (link prediction)	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6937428/
4.	DBpedia, fake news dataset; TransE	Fake news detection	http://knowledge-representation.org/j.z.pan/pub/PPLL+2018.pdf
5.	KG is built from Twitter data; existing embedding techniques	Link prediction, clustering, and visualization in the social politics domain	https://link.springer.com/article/10.1007/s10618-021-00760-w
6.	KG built from e-commerce data; new embedding technique	E-commerce	https://dl.acm.org/doi/10.1145/3502223.3502232
7.	Product KG; new embedding technique	Search ranking, recommendation	https://arxiv.org/abs/1911.12481
8.	E-commerce KG	Item identification, item classification, recommendation	https://deepai.org/publication/billion-scale-pre-trained-e-commerce-product-knowledge-graph-model
9.	KG built from stock data	Stock price movement	https://link.springer.co

		prediction	m/chapter/10.1007/978-3-319-97289-3_8
10.	KG built from semantic information of the podcasts	Discovery of Underserved Podcasts	https://dl.acm.org/doi/10.1145/3459637.3481934
11.	Multilingual Event-Centric Temporal Knowledge Graph	Biographical timeline generation	https://dl.acm.org/doi/10.3233/SW-190355
12.	Healthcare Knowledge Graph of medical records	Clinical search queries, retrieves relevant, updated, and trusted medical content	http://ceur-ws.org/Vol-2980/paper414.pdf
13.	KG (Multimodal) built from images and text of tourism data	Tourism route generation, querying information, and planning itineraries	https://link.springer.com/chapter/10.1007/978-981-16-5943-0_2
14.	Legal KG built from court cases, judgments, laws, and other legal documents	Question answering, document similarity, and search.	https://www.w3.org/2018/vocabws/presentations/Mireles.pdf https://dgraux.github.io/publications/Legal-KG_ESWC_2020_Industry.pdf

References

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2. <https://arxiv.org/pdf/2003.02320.pdf>
3. <https://towardsdatascience.com/introduction-to-knowledge-graph-embedding-with-dgl-ke-77ace6fb60ef>
4. <https://mgalkin.medium.com/knowledge-graphs-aaai-2020-c457ad5aafc0>
5. <https://iopscience.iop.org/article/10.1088/1742-6596/1487/1/012016/pdf>
6. <https://arxiv.org/pdf/2202.05786.pdf>
7. William L. Hamilton. (2020). Graph Representation Learning. Synthesis Lectures on Artificial Intelligence and Machine Learning, Vol. 14, No. 3, Pages 1-159. https://www.cs.mcgill.ca/~wlh/gri_book/files/GRL_Book.pdf

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