Innsbruck Object Relations Dataset

This database contains the set of possible object-object spatial relations. Learning object-object relations is a difficult problem with sparse, noisy, corrupted and incomplete information which makes it an interesting and challenging machine problem.

The learning scenario based on which this database was created is a toy clean-up task in a room of kids, where an agent needs to plan how to transform a messy child's room into a tidy one by moving objects to their storage locations and creating order. An agent can integrate this knowledge into the planning process and use it to rene the world model. Large numbers of objects and their potential interactions in this scenario make this task a large-scale problem. Estimating the missing relations based on those already known can accelerate planning procedures.

Dataset Features

- Database is generated based on the Princeton Shape Benchmark database "The Princeton shape benchmark", P. Min P.Shilane, M. Kazhdan, and T. Funkhouser, In Shape Modeling International, June 2004.
- Database contains 4 datasets for each possible connection between objects (in, on, below and next to). The problem is formulated that all possible relations should be treated so two objects can have mulitple connections.
- Links between object are determined by values:
    - **0** - no connection
    - **1** - direct connection
    - **-1** - reverse connection
    - **empty** - unknown connection

Reference

"*Learning missing edges via kernels in partially-known graphs*", Senka Krivic, Sandor Szedmak, Hanchen Xiong, Justus Piater, European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning 2015. PDF Please cite this paper if you are using this database.

BibTex @InProceedings{Krivic-2015-ESANN,

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title = {{Learning missing edges via kernels in partially-known graphs}},
author = {Krivi\'{c}, Senka and Szedmak, Sandor and Xiong, Hanchen and
Piater, Justus},
booktitle = {{European Symposium on Artificial Neural Networks,
Computational Intelligence and Machine Learning}},
year = 2015,
url = {https://iis.uibk.ac.at/public/papers/Krivic-2015-ESANN.pdf}
```

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Acknowledgement

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