Main Goal

Can 'Translation of Data' be used to solve a problem in a different framework?

Translation of Data

To solve a problem in some framework, we can translate it to a different framework where an existing algorithm can be used, if a suitable data translation is known. We study such translations.

Original Problem | Original Framework | Alternative Framework
---|---|---
\text{data} | \text{data} | \text{data'}
\rightarrow | | \rightarrow \text{solution'}
| \text{solution} | \text{solution'}

Algorithm a cannot be used.

In an alternative framework we can use algorithm a'.

Data Translations

- Hypergraph to Graph
- Graph to Hypergraph
- ILP to Hypergraph
- Hypergraph to (3-layered) directed graph

Questions:
- Can this method be used to solve problems more efficient?
- Will this lead to new insights?
- Can knowledge about one framework be transferred to the other?
- Can new mining algorithms be found using this principle?
- How can the knowledge about refinement operators in ILP be transferred to the context of graphs and hypergraphs?