Master thesis presentation: Mining adverse events from healthcare data

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Problem description

Problem: voluntary reporting records a fraction of the adverse events

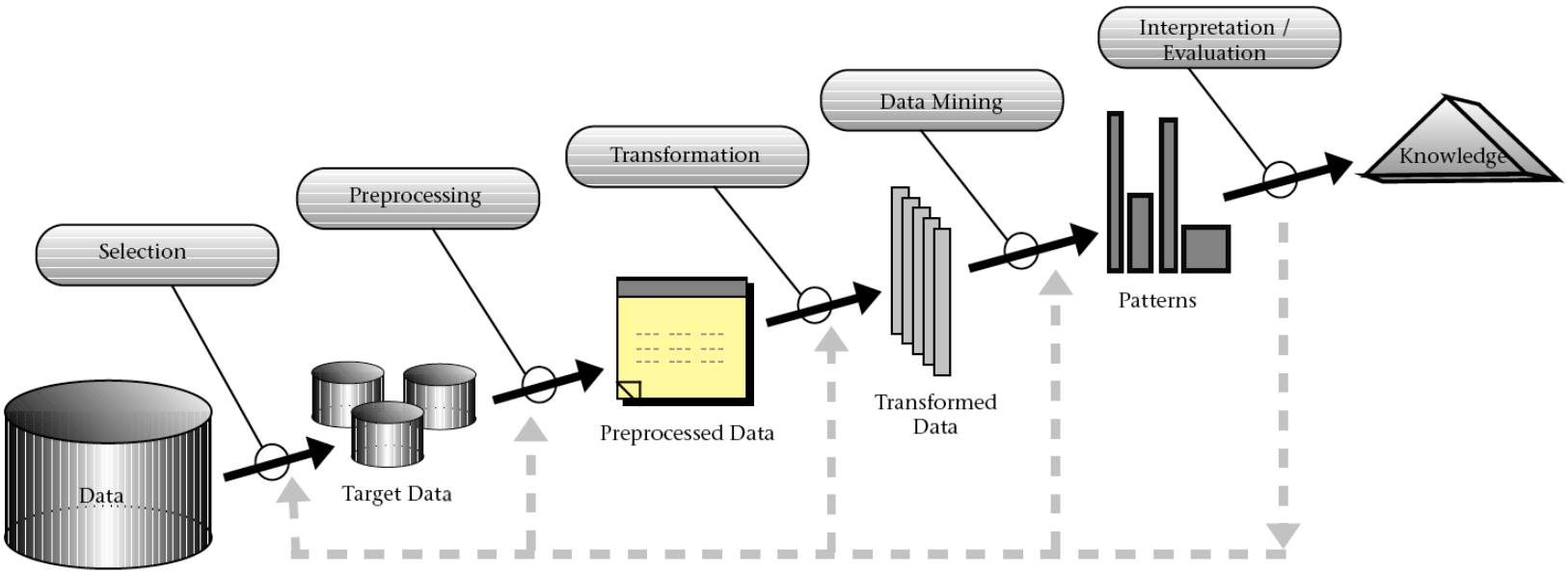
manual detection

- lacks consistency
- is limited in scope
- is costly
- is driven by intuition

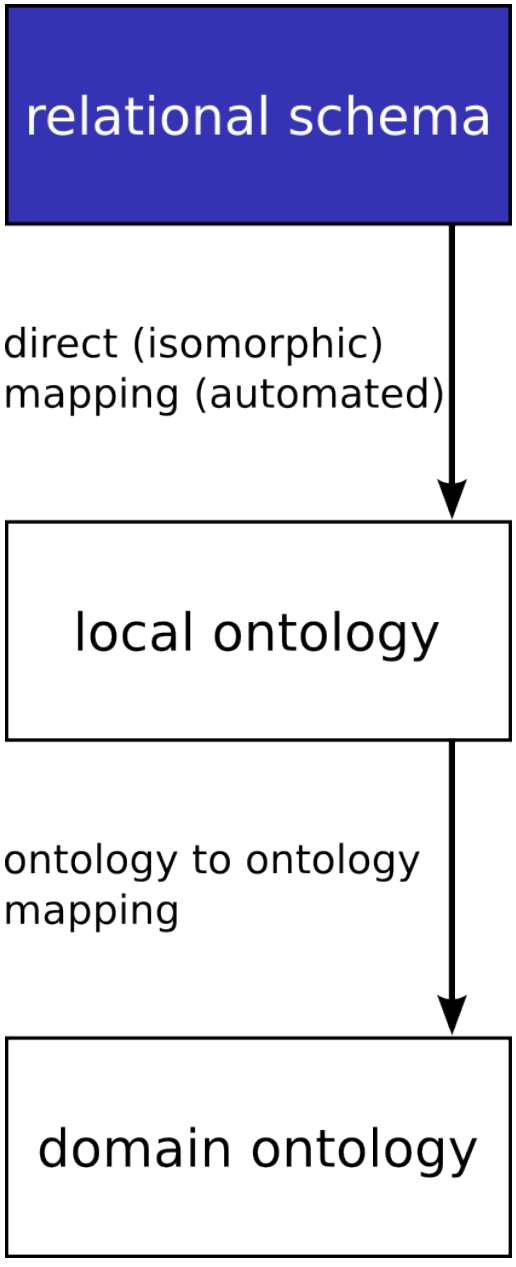
data mining

- treats all patient data uniformly
- can reason over all relevant data
- enables automation
- makes biases explicit

Knowledge discovery process



Data Preparation

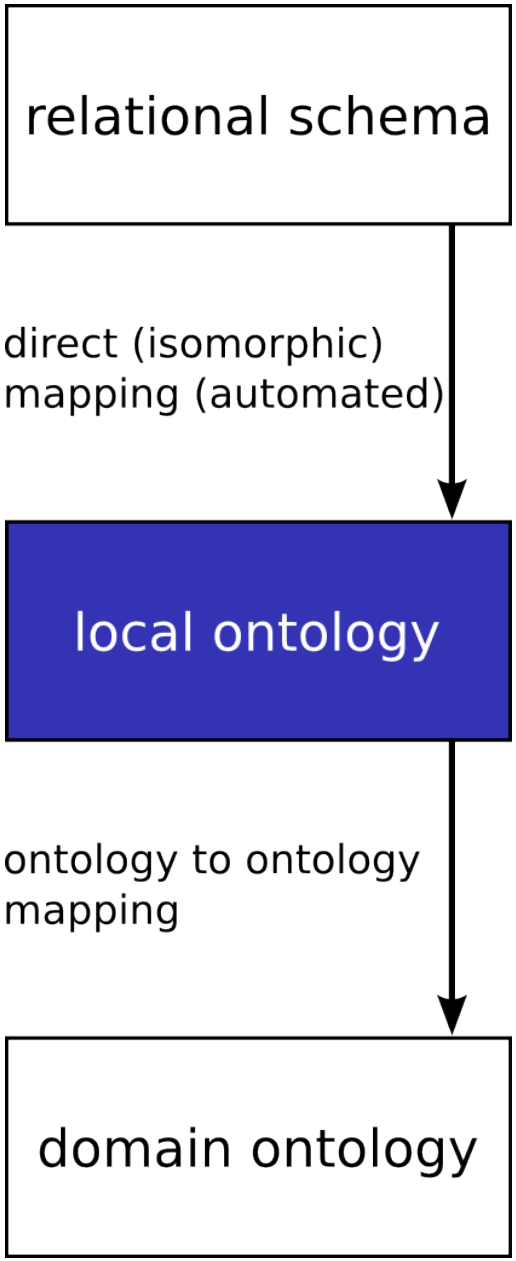


patient_id	birth_date	gender
patient_1	12-AUG-1956	M
...	...	...

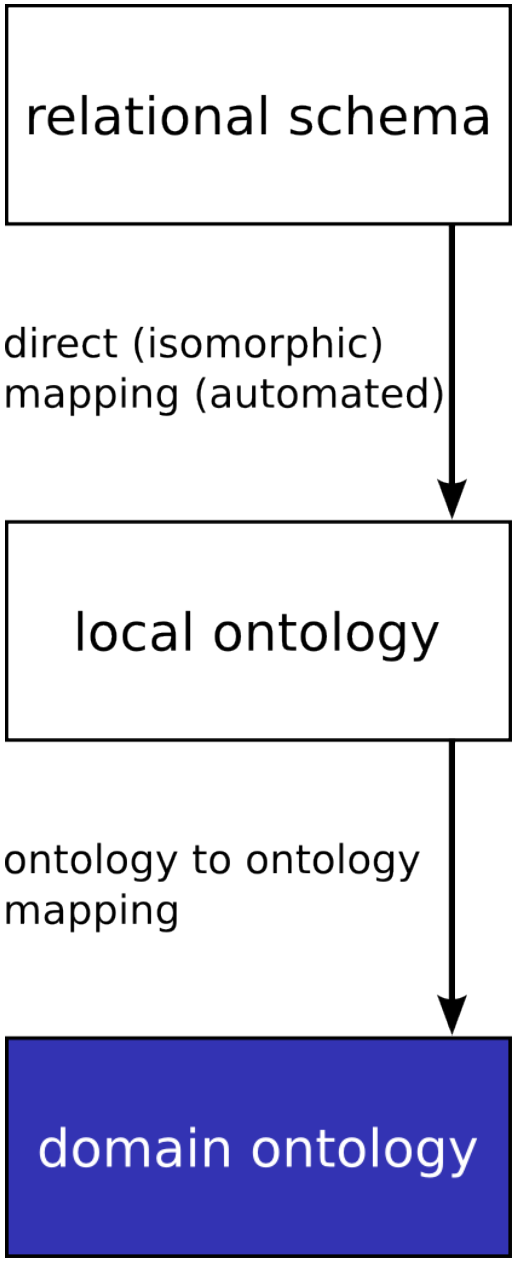
medical_case_id	patient_id	admission_date	discharge_date
medical_case_100	patient_1	17-JAN-2009	19-JAN-2009
medical_case_101	patient_1	03-SEP-2009	27-SEP-2009
...	...	...	...

diagnose_id	medical_case_id	ICD_code
diagnose_1	medical_case_101	F48
diagnose_2	medical_case_101	T85.4
...	...	...

Data Preparation



Data Preparation



Problem approach

split problem up AE's based on same trigger

Data mining approach characteristics

- utilise relational input data
- perform induction
- incorporate reverse machine learning
- probability

Data mining approach characteristics

example patient record timeline