

# Relational Concept Analysis

## *State of the Art*

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# RCA vs. similarly motivated work beyond FCA (1)

**Input:** What we process

- RCF compare to **relational databases** / OO datasets / DL knowledge base
  - **schema** part:
    - names (contexts, attributes, relations)
    - incidences (context-to-attribute, context-to-relation)
  - **data** part:
    - objects in contexts
    - links in relations

## RCA vs. similarly motivated work beyond FCA (2)

### Task: What we do

- Analyzing an RCF
  - **relational data mining** = objects with links (Dzeroski & Lavrač, 2001)
  - **conceptual clustering** of ER-compliant data (Stepp & Michalski, 1986)
  - discovery of **closed conjunctive DL patterns** (evolving Abox/TBox)

## RCA vs. similarly motivated work beyond FCA (3)

**Method:** How we do it

- Relational scaling
  - **dynamic propositionalization** of FOL-level data descriptions (de Raedt, 2008)

## RCA vs. related work within the FCA field

Approach	Key differences
<i>Relational analysis</i> (Priss, 1996)	inter-concept links manually added
<i>Power context families</i> (Prediger & Wille, 1999)	links are higher-order formal objects; yet higher-order concepts hard to connect downwards
<i>Graph-shaped data</i> (Liquière & Sallantin, 1998) (Kuznetsov, 1999)	links remain intra-object hence no inter-concept relations
<i>Logical concept analysis</i> (Ferré <i>et al.</i> , 2005)	links remain intra-object
<i>Pattern structures</i> (Ganter & Kuznetsov, 2001)	links remain intra-object