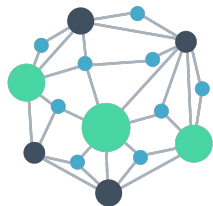
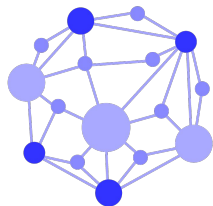


# Input

Knowledge Graphs without semantics



Knowledge Graphs with semantics



## DIGGER

### Discovering Patterns

- Uploading the KG (RDF triples) for rule mining system
- Horn rules are of the form Body  $\rightarrow$  Head
- Saving the logical rules in local system



### Applying Entailment Regimes



- Applying entailment regimes to the KG to enrich the mined rules
- Computing metrics for enriched mined rules

Discovering Patterns

### Exploring Patterns

- SPARQL queries over KGs are used to evaluate the mined logical rules
- Graphs plotting the distributions



### Categorizing Discovered Patterns

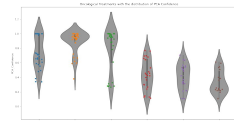


- Adhering to clinical guidelines
- Inaccuracy in data
- Potential missing relationships

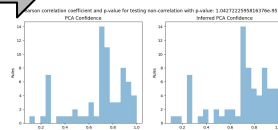
Analyzing Patterns

# Output

Distribution of PCA for Definitions in Head



Null Hypothesis Test



Demonstration of Analysis

Analysis using SQL queries

```
Grouping by Head
• MINQ - minimum PCA Confidence score for each Head of the rule
• MAXQ - maximum PCA Confidence score for each Head of the rule
• AVGQ - average PCA Confidence score for each Head of the rule

1 [2] query = "SELECT DISTINCT HEAD, MINQ_PCA_Confidence, MAXQ_PCA_Confidence, AVGQ_PCA_Confidence FROM #BODY BY HEAD"

For example:
• Head headDevelopmentTreatmentChemotherapy has many instances (nodes).
• MINQ_PCA_Confidence is 0.1.
• MAXQ_PCA_Confidence is 0.97 and
• AVGQ_PCA_Confidence is 0.55.

1 [2] SELECT MINQ_PCA_Confidence, MAXQ_PCA_Confidence, AVGQ_PCA_Confidence
FROM #BODY BY HEAD
```