

# Rules

2 października 2023

All theory issues were discussed during the lecture, so feel free to go back to the slides and notes from the lecture or [1].

# Dataset

id	cuisine	baverages	vege	location	stars
1	Polish	non-alco	yes	city-centre	one
2	American	all	yes	suburbs	one
3	American	non-alco	no	road	one
4	Polish	all	no	suburbs	one
5	Italian	none	no	road	two
6	Polish	all	yes	city-centre	two
7	Polish	all	no	city-centre	two
8	American	none	yes	road	three
9	Italian	alco	yes	suburbs	three
10	Polish	alco	yes	road	three
11	Italian	alco	no	suburbs	three

# Task

Generate rule for three stars with the PRISM algorithm.

# Task

There is also required one additional package for this lesson with the PRISM algorithm which can be easily installed via package manager.

1. Open Weka GUI.
2. Choose Tools → Package manager.
3. Find package called *simpleEducationalLearningSchemes* and install it.

# Task

Generate all the rules for the given dataset with PRISM algorithm.

# Task

Generate rules for three stars with LEM2 algorithm.

# Task

There is also required one additional package for this lesson with the MODLEM algorithm which can be easily installed via package manager.

1. Open Weka GUI.
2. Choose Tools → Package manager.
3. Find package called *Modlem* and install it.

# Task

Generate all the rules for the given dataset with MODLEM algorithm.



# Evaluation measures

$$p \rightarrow q$$

- ▶ **support**  $\frac{|\text{items covered by rule}|}{|\text{all items}|}$
- ▶ **confidence**  $\frac{|\text{items covered by rule}|}{|\text{items covered by conditional part}|}$
- ▶ **coverage**  $\frac{|\text{items covered by rule}|}{|\text{items covered by decision part}|}$

# Task

Generate all the rules for the given dataset with RIPPER algorithm (JRIP). Do you remember how it works? Compare all the results.

# Task

Load the second dataset. Find the differences between first and second dataset. How they can influence the results?  
Run it with PRISM and MODLEM.

# Question

How can we classify new objects?

# Association rules

Generate all the rules for the given dataset with Apriori algorithm.

# Bibliography



KRAWIEC, Krzysztof; STEFANOWSKI, Jerzy. Uczenie maszynowe i sieci neuronowe. Wydaw. Politechniki Poznańskiej, 2003.