Assignment 12 - Rule mining

June 29, 2019

0.1 Assignment 12

0.1.1 Problem

Develop significant associative rules for a given dataset by using a Python code.
Chose $supp = 0.2$ and $conf = 0.6$.

0.1.2 Resolution

We can import from *apyori* the function *apriori* that execute the Apriori algorithm. We also declare the dataset that we must use.

```
In [1]: from apyori import apriori
        data=[["A","C"], ["A", "B", "D"], ["B","D"], ["B","D"], ["A", "B", "C"],
                 ["B", "C"], ["A", "C"], ["A", "B", "E"], ["A", "B", "C", "E"], ["A", "E"]]
```

We can use the function *apriori* and later we can process he result in order to obtain a more understandable view of the data obtained.

```
In [2]: association_rules = apriori(data, min_support=0.2, min_confidence=0.6)
        association_results = list(association_rules)
        for item in association_results:

            pair = item[2]
            base = [x for x in pair[0][0]]
            rule = [x for x in pair[0][1]]

            if len(base) == 0:
                continue
            print("Rule: {" + str(base) + "} -> {" + rule[0] + "}")
            print("Support: " + str(item[1]))
            print("Confidence: " + str(item[2][0][2]))
            print("Lift: " + str(item[2][0][3]))
            print("-----------------------------------")
```

```
Rule: {['C']} -> {A}
Support: 0.4
Confidence: 0.8
Lift: 1.142857142857143
```

```
-----------------------------------
Rule: {['E']} -> {A}
Support: 0.3
Confidence: 1.0
Lift: 1.4285714285714286
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Rule: {['C']} -> {B}
Support: 0.3
Confidence: 0.6
Lift: 0.8571428571428572
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Rule: {['D']} -> {B}
Support: 0.3
Confidence: 1.0
Lift: 1.4285714285714286
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Rule: {['E']} -> {B}
Support: 0.2
Confidence: 0.6666666666666667
Lift: 0.9523809523809526
-----------------------------------
Rule: {['C', 'B']} -> {A}
Support: 0.2
Confidence: 0.6666666666666667
Lift: 0.9523809523809526
-----------------------------------
Rule: {['E', 'A']} -> {B}
Support: 0.2
Confidence: 0.6666666666666667
Lift: 0.9523809523809526
-----------------------------------
```