RiVal – A Toolkit to Foster Reproducibility in Recommender System Evaluation

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Reproducibility, Reproduction, and Benchmarking

RiVal – an open source recommender system evaluation toolkit written in Java -- allows for complete control of the evaluation dimensions that take place in any experimental evaluation of a recommender system: data splitting, definition of evaluation strategies, and computation of evaluation metrics.

The toolkit is available as Maven dependencies and as a standalone program.

It integrates three recommendation frameworks: Mahout, LensKit, MyMediaLite.

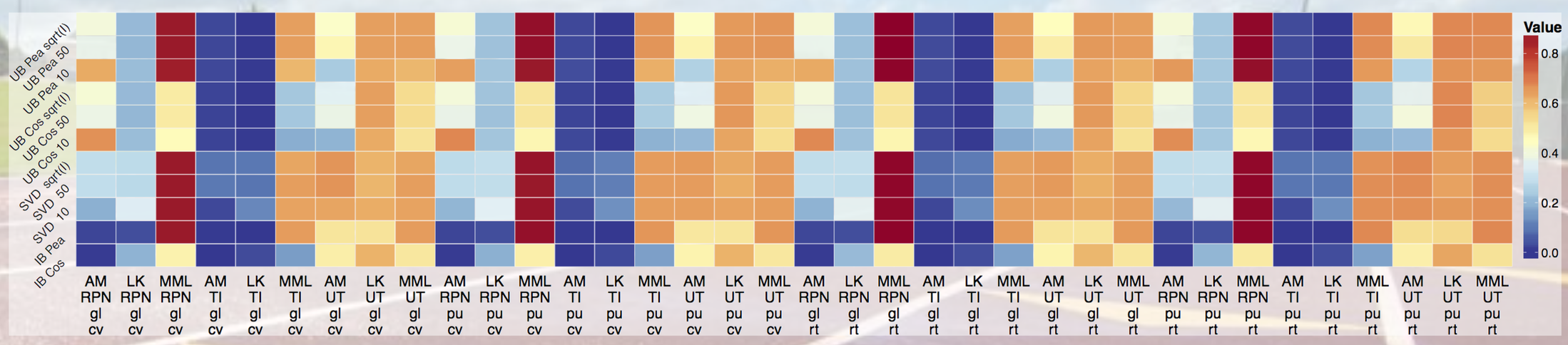
Future Work

- Integrate more RecSys libraries
- Evaluate more than accuracy (novelty, diversity).
- Set up a RESTful API
- Full CLI support
- And more

See **github.com/recommenders/rival/issues**

Example

Comparing nDCG@10 for the same algorithms on the same dataset in Apache Mahout, MyMediaLite & Lenskit



Configuration

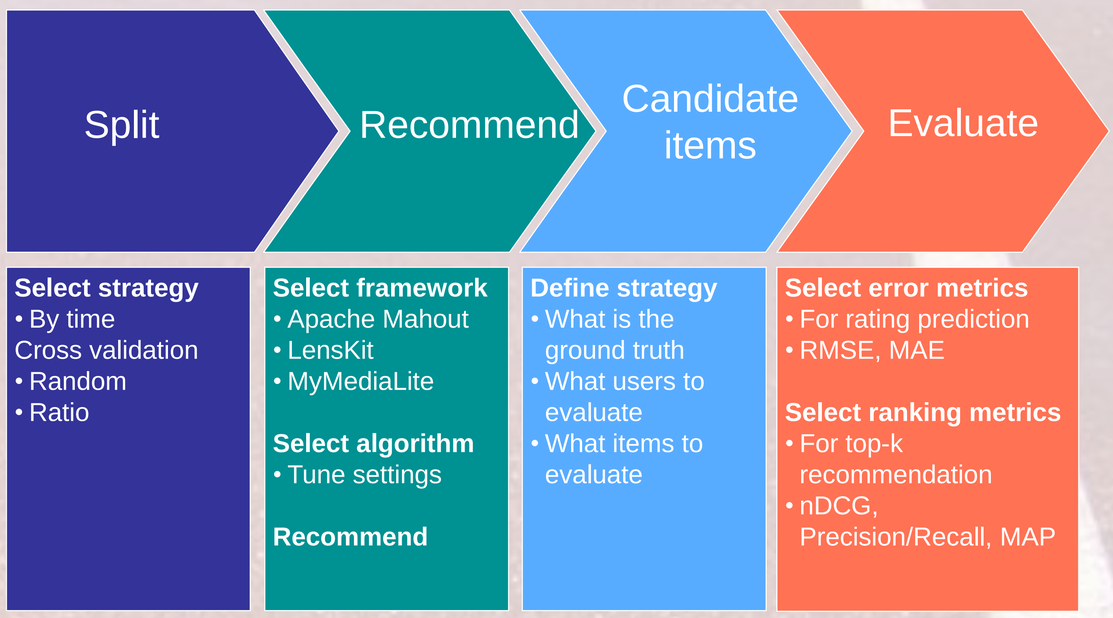
Listing 1: Example of data splitter configuration

```
dataset.file=dataset.csv
dataset.parser=net.recommenders.rival.split.\
       parser.MovielensParser
dataset.splitter=net.recommenders.rival.split.\
       splitter.CrossValidationSplitter
split.peruser=false
split.seed=2014
split.cv.nfolds=5
split.output.folder=./ml100kcv/
split.training.prefix=mov100k_fold
split.test.prefix=mov100k_fold
split.training.suffix=_global.train
split.test.suffix=_global.test
```

Listing 2: Example of recommendation configuration

```
recommender=org.grouplens.lenskit.knn.user.\
       UserUserItemScorer
similarity=org.grouplens.lenskit.vectors.\
       similarity.CosineVectorSimilarity
neighborhood=50
training=./trainset.scv
test=./testset.csv
output=./results.csv
framework=lenskit
```

Work Flow



Listing 2: Using the recommendation module

```
#!/bin/bash
pom_file=./rival-recommend/pom.xml
files=‘ls *.recommend.properties‘
for file in $files
do
       mvn -f $pom_file exec:java -e -Dfile=$file
done
```

We can use each of the modules independently or in cascade

These are two examples of how the modules can be called from command line

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Further Reading

RiVal – A Toolkit to Foster Reproducibility in Recommender System Evaluation in RecSys 2014
A. Said, A. Bellogín
Poster abstract

Comparative Recommender System Evaluation: Benchmarking Recommendation Frameworks
In RecSys 2014
A. Said, A. Bellogín

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http://rival.recommenders.net