Example Session for Supervised Classification

Andreas Borg, Murat Sariyar

January 11, 2012

This document shows an example session for using supervised classification in the package *RecordLinkage* for deduplication of a single data set. Conducting linkage of two data sets differs only in the step of generating record pairs.

See also the vignette on Fellegi-Sunter deduplication for some general information on using the package.

1 Generating comparison patterns

In this session, a training set with 50 matches and 250 non-matches is generated from the included data set `RLData10000`. Record pairs from the set `RLData500` are used to calibrate and subsequently evaluate the classifiers.

```
> data(RLdata500)
> data(RLdata10000)
> train_pairs=compare.dedup(RLdata10000, identity=identity.RLdata10000,
+   n_match=500, n_non_match=500)
> eval_pairs=compare.dedup(RLdata500,identity=identity.RLdata500)
```

2 Training

`trainSupv` handles calibration of supervised classificators which are selected through the argument `method`. In the following, a single decision tree (rpart), a bootstrap aggregation of decision trees (bagging) and a support vector machine are calibrated (svm).

```
> model_rpart=trainSupv(train_pairs, method="rpart")
> model_bagging=trainSupv(train_pairs, method="bagging")
> model_svm=trainSupv(train_pairs, method="svm")
```

3 Classification

`classifySupv` handles classification for all supervised classificators, taking as arguments the structure returned by `trainSupv` which contains the classification model and the set of record pairs which to classify.

```
> result_rpart=classifySupv(model_rpart, eval_pairs)
> result_bagging=classifySupv(model_bagging, eval_pairs)
> result_svm=classifySupv(model_svm, eval_pairs)
```

4 Results

4.1 Rpart

alpha error 0.020000

beta error 0.050714

accuracy 0.949299

	N	P	L
FALSE	118376	0	6324
TRUE	1	0	49

4.2 Bagging

alpha error 0.000000

beta error 0.004587

accuracy 0.995415

	N	P	L
FALSE	124128	0	572
TRUE	0	0	50

4.3 SVM

alpha error 0.000000

beta error 0.005493

accuracy 0.994509

	N	P	L
FALSE	124015	0	685
TRUE	0	0	50