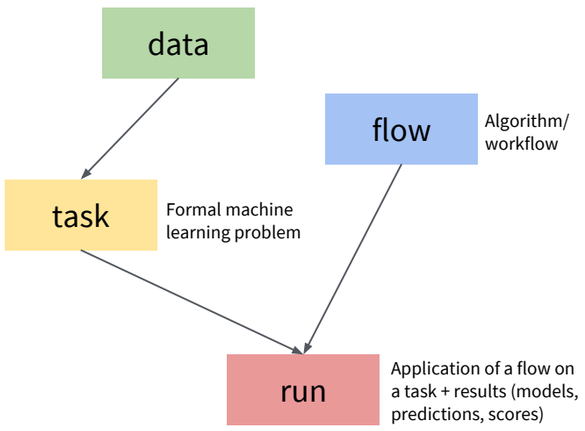
OpenML

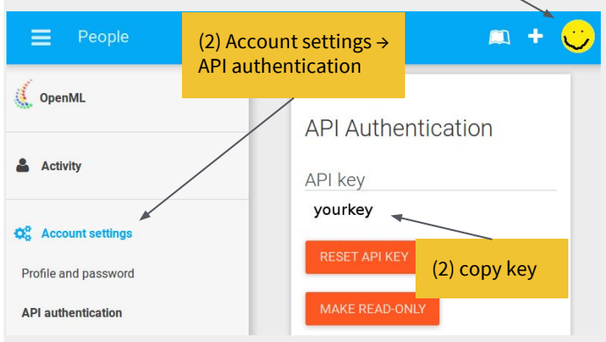
R Cheat Sheet

OpenML Objects



Setup

1. Create account on OpenML.org
2. Install and load R package
   install.packages("OpenML")
   library("OpenML")
3. Set key:



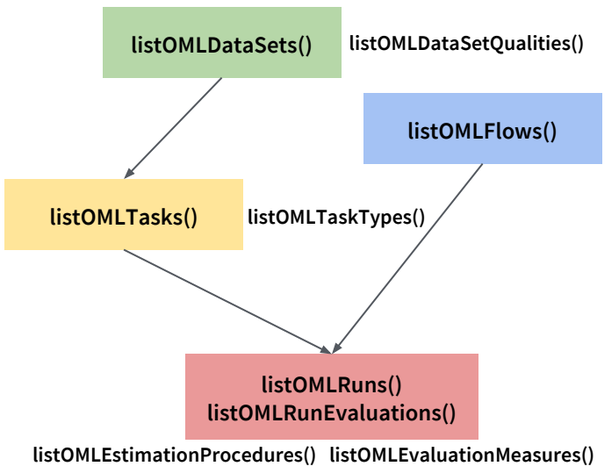
saveOMLConfig(apikey = "yourkey")

Getting/setting setup options

getOMLConfig()
setOMLConfig()
saveOMLConfig(..., overwrite=TRUE)
Find your config-file: **path.expand("~/.openml/config")**

Listing, Download, Running and Uploading

Listing - Result is always a data frame with info



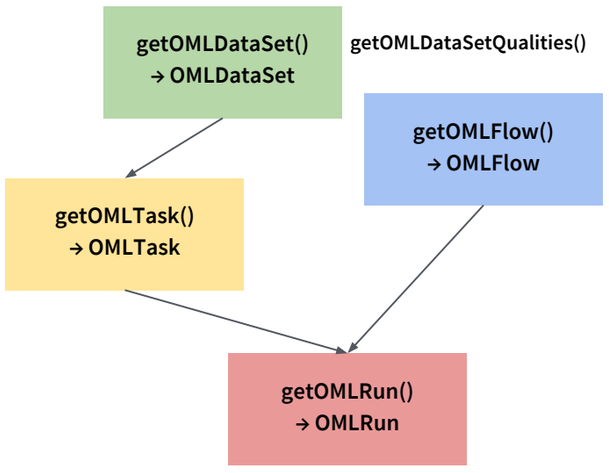
Running models on tasks

Example:

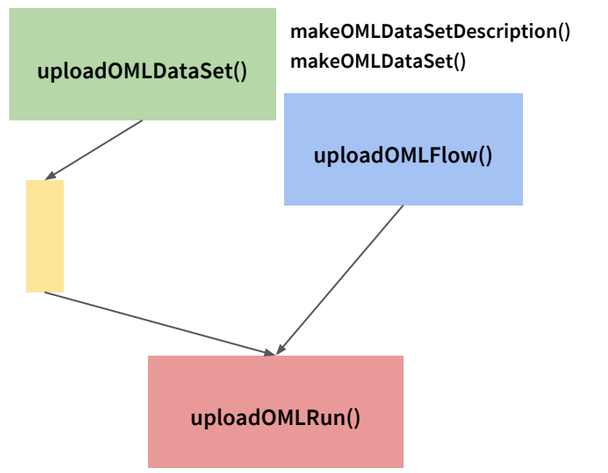
```
task = getOMLTask(task.id = 59)
lrn = mlr::makeLearner("classif.rpart")
run.mlr = runTaskMlr(task, lrn)
```

For more complex analyses see also mlr cheatsheet

Downloading

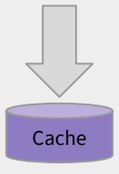


Uploading



Other features

Caching



list and **get** functions only download information that has not been downloaded before.

Find your cache folder:
file.path(tempdir(), "cache")

Conversion OpenML (OML) -- mlr (Mlr)

OpenML objects can be converted to mlr objects and the other way around

convertOMLDataSetToMlr()
convertMlrTaskToOMLDataSet()

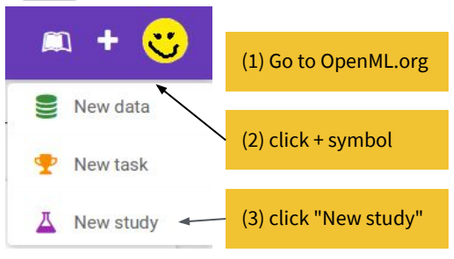
convertOMLFlowToMlr()
convertMlrLearnerToOMLFlow()

convertOMLTaskToMlr()

convertOMLRunToBMR()

OpenML Studies

Studies can be used to collect results of runs. They can be accessed via tag "study_<#>" (replace <#> with a study number)



List all results of a study, e.g. study 34:
listOMLRunEvaluations(tag = "study_34")

Use cases

Data owner

TODO: Upload a data set and create a task so that others can build models.

1. Clean data set
2. **makeOMLDataSetDescription()**
3. **makeOMLDataSet()**
4. **uploadOMLDataSet()**
5. Wait for data set to be active on OpenML.org
6. Create task on OpenML.org: go to your data set page
   → DEFINE A NEW TASK

In case users raise issues, start with step 1.

Machine learner

TODO: Solve a task as well as possible.

1. **getOMLTask()**
2. **mlr::makeLearner()**
3. **runTaskMlr()**
4. **uploadOMLRun()** (this automatically also uploads the flow if not yet available)
5. Check performance of run on website and compare to other runs, if improvement possible/needed, return to step 2.

Benchmarker

TODO: Compare the performance of different algorithms (learners) on different tasks.

1. **taskinfos = listOMLTasks(<characteristics>)**
2. **tasks = lapply(taskinfos$task.id, getOMLTask)**
3. **mylrns = lapply(<mylearners>, mlr::makeLearner)**
4. **grid = expand.grid(task.id = tasks$task.id, lrn.ind = seq_along(mylrns))**
5. **myruns = lapply(seq_row(grid), function(i) { task = getOMLTask(grid$task.id[i]) ind = grid$lrn.ind[i] runTaskMlr(task, lrn.list[[ind]]) })**
6. **lapply(myruns, uploadOMLRun, tags = "<mytag>")**
7. View results on OpenML.org or get results with **evals = listOMLRunEvaluations(tag = "<mytag>")**

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