Package ‘mlflow’

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Type Package

Title Interface to 'MLflow'

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Description R interface to 'MLflow', open source platform for the complete machine learning life cycle, see <https://mlflow.org/>. This package supports installing 'MLflow', tracking experiments, creating and running projects, and saving and serving models.

License Apache License 2.0

URL https://github.com/mlflow/mlflow

BugReports https://github.com/mlflow/mlflow/issues

Depends R (>= 3.3.0)

Imports base64enc, forge, fs, git2r, glue, httpuv, httr, ini, jsonlite, openssl, processx, purrr, rlang (>= 0.2.0), swagger, tibble (>= 2.0.0), withr, yaml, zeallot

Suggests carrier, covr, h2o, keras, lintr, sparklyr, stringi, testthat (>= 2.0.0), reticulate, xgboost

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'logging.R' 'mlflow-package.R' 'model-crate.R' 'model-python.R'

'model.R' 'model-utils.R' 'model-h2o.R' 'model-keras.R'

'model-registry.R' 'model-serve.R' 'model-swagger.R'

'model-xgboost.R' 'project-param.R' 'project-run.R'

'project-source.R' 'python.R' 'tracking-client.R'

'tracking-experiments.R' 'tracking-observer.R'

'tracking-globals.R' 'tracking-rest.R' 'tracking-runs.R'

'tracking-server.R' 'tracking-ui.R' 'tracking-utils.R'

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**build_context_tags_from_databricks_job_info**

Get information from a Databricks job execution context

**Description**

 Parses the data from a job execution context when running on Databricks in a non-interactive mode. This function extracts relevant data that MLflow needs in order to properly utilize the MLflow APIs from this context.

**Usage**

```
build_context_tags_from_databricks_job_info(job_info)
```

**Arguments**

- **job_info**: The job-related metadata from a running Databricks job

**Value**

A list of tags to be set by the run context when creating MLflow runs in the current Databricks Job environment
build_context_tags_from.databricks_notebook_info

Get information from Databricks Notebook environment

Description

Retrieves the notebook id, path, url, name, version, and type from the Databricks Notebook execution environment and sets them to a list to be used for setting the configured environment for executing an MLflow run in R from Databricks.

Usage

build_context_tags_from.databricks_notebook_info(notebook_info)

Arguments

notebook_info The configuration data from the Databricks Notebook environment

Value

A list of tags to be set by the run context when creating MLflow runs in the current Databricks Notebook environment

mlflow_client

Initialize an MLflow Client

Description

Initializes and returns an MLflow client that communicates with the tracking server or store at the specified URI.

Usage

mlflow_client(tracking_uri = NULL)

Arguments

tracking_uri The tracking URI. If not provided, defaults to the service set by ‘mlflow_set_tracking_uri()’. 
**mlflow_create_experiment**

*Create Experiment*

**Description**

Creates an MLflow experiment and returns its id.

**Usage**

```r
mlflow_create_experiment(
  name,
  artifact_location = NULL,
  client = NULL,
  tags = NULL
)
```

**Arguments**

- **name**
  - The name of the experiment to create.
- **artifact_location**
  - Location where all artifacts for this experiment are stored. If not provided, the remote server will select an appropriate default.
- **client**
  - (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
- **tags**
  - Experiment tags to set on the experiment upon experiment creation.

---

**mlflow_create_model_version**

*Create a model version*

**Description**

Create a model version

**Usage**

```r
mlflow_create_model_version(
  name,
  source,
  run_id = NULL,
  tags = NULL,
)```
mlflow_create_registered_model

Create registered model

Description

Creates a new registered model in the model registry

Usage

```r
mlflow_create_registered_model(
  name,
  tags = NULL,
  description = NULL,
  client = NULL
)
```

Arguments

- **name**: The name of the model to create.
- **tags**: Additional metadata for the registered model (Optional).
- **description**: Description for the registered model (Optional).
- **client** (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
**mlflow_delete_experiment**  

*Delete Experiment*

**Description**

Marks an experiment and associated runs, params, metrics, etc. for deletion. If the experiment uses FileStore, artifacts associated with experiment are also deleted.

**Usage**

```r
mlflow_delete_experiment(experiment_id, client = NULL)
```

**Arguments**

- `experiment_id` ID of the associated experiment. This field is required.
- `client` (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

---

**mlflow_delete_model_version**  

*Delete a model version*

**Description**

Delete a model version

**Usage**

```r
mlflow_delete_model_version(name, version, client = NULL)
```

**Arguments**

- `name` Name of the registered model.
- `version` Model version number.
- `client` (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
**mlflow_delete_registered_model**

*Delete registered model*

**Description**

Deletes an existing registered model by name.

**Usage**

```r
mlflow_delete_registered_model(name, client = NULL)
```

**Arguments**

- **name**: The name of the model to delete.
- **client**: (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

---

**mlflow_delete_run**

*Delete a Run*

**Description**

Deletes the run with the specified ID.

**Usage**

```r
mlflow_delete_run(run_id, client = NULL)
```

**Arguments**

- **run_id**: Run ID.
- **client**: (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
**mlflow_delete_tag**

*Delete Tag*

**Description**

Deletes a tag on a run. This is irreversible. Tags are run metadata that can be updated during a run and after a run completes.

**Usage**

```
mlflow_delete_tag(key, run_id = NULL, client = NULL)
```

**Arguments**

- **key**: Name of the tag. Maximum size is 255 bytes. This field is required.
- **run_id**: Run ID.
- **client**: (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

---

**mlflow_download_artifacts**

*Download Artifacts*

**Description**

Download an artifact file or directory from a run to a local directory if applicable, and return a local path for it.

**Usage**

```
mlflow_download_artifacts(path, run_id = NULL, client = NULL)
```

**Arguments**

- **path**: Relative source path to the desired artifact.
- **run_id**: Run ID.
- **client**: (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
**mlflow_end_run**  
*End a Run*

**Description**

Terminates a run. Attempts to end the current active run if `run_id` is not specified.

**Usage**

```r
mlflow_end_run(
  status = c("FINISHED", "FAILED", "KILLED"),
  end_time = NULL,
  run_id = NULL,
  client = NULL
)
```

**Arguments**

- **status**
  Updated status of the run. Defaults to ‘FINISHED’. Can also be set to "FAILED" or "KILLED".

- **end_time**
  Unix timestamp of when the run ended in milliseconds.

- **run_id**
  Run ID.

- **client**
  (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

**mlflow_get_experiment**  
*Get Experiment*

**Description**

Gets metadata for an experiment and a list of runs for the experiment. Attempts to obtain the active experiment if both `experiment_id` and `name` are unspecified.

**Usage**

```r
mlflow_get_experiment(experiment_id = NULL, name = NULL, client = NULL)
```
**mlflow_get_latest_versions**

*Get latest model versions*

**Arguments**

- `experiment_id` ID of the experiment.
- `name` The experiment name. Only one of ‘name’ or ‘experiment_id’ should be specified.
- `client` (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

**Description**

Retrieves a list of the latest model versions for a given model.

**Usage**

```r
mlflow_get_latest_versions(name, stages = list(), client = NULL)
```

**Arguments**

- `name` Name of the model.
- `stages` A list of desired stages. If the input list is NULL, return latest versions for ALL_STAGES.
- `client` (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

**mlflow_get_metric_history**

*Get Metric History*

**Description**

Get a list of all values for the specified metric for a given run.

**Usage**

```r
mlflow_get_metric_history(metric_key, run_id = NULL, client = NULL)
```
mlflow_get_registered_model

**Arguments**

- **metric_key**
  Name of the metric.
- **run_id**
  Run ID.
- **client**
  (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

---

mlflow_get_model_version

*Get a model version*

**Description**

Get a model version

**Usage**

```
mlflow_get_model_version(name, version, client = NULL)
```

**Arguments**

- **name**
  Name of the registered model.
- **version**
  Model version number.
- **client**
  (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

---

mlflow_get_registered_model

*Get a registered model*

**Description**

Retrieves a registered model from the Model Registry.

**Usage**

```
mlflow_get_registered_model(name, client = NULL)
```
**mlflow_get_run**

**Arguments**

- **name**: The name of the model to retrieve.
- **client** *(Optional)* An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

**Description**

Gets metadata, params, tags, and metrics for a run. Returns a single value for each metric key: the most recently logged metric value at the largest step.

**Usage**

```python
mlflow_get_run(run_id = NULL, client = NULL)
```

**Arguments**

- **run_id**: Run ID.
- **client** *(Optional)* An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

**mlflow_get_tracking_uri**

**Get Remote Tracking URI**

**Description**

Gets the remote tracking URI.

**Usage**

```python
mlflow_get_tracking_uri()
```
**mlflow_id**  
*Get Run or Experiment ID*

### Description

Extracts the ID of the run or experiment.

### Usage

```r
mlflow_id(object)
```

#### S3 method for class 'mlflow_run'

```r
mlflow_id(object)
```

#### S3 method for class 'mlflow_experiment'

```r
mlflow_id(object)
```

### Arguments

- **object**: An `mlflow_run` or `mlflow_experiment` object.

---

**mlflow_list_artifacts**  
*List Artifacts*

### Description

Gets a list of artifacts.

### Usage

```r
mlflow_list_artifacts(path = NULL, run_id = NULL, client = NULL)
```

### Arguments

- **path**: The run’s relative artifact path to list from. If not specified, it is set to the root artifact path.
- **run_id**: Run ID.
- **client**: (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
mlflow_load_flavor  
Load MLflow Model Flavor

Description
Loads an MLflow model using a specific flavor. This method is called internally by `mlflow_load_model`, but is exposed for package authors to extend the supported MLflow models. See https://mlflow.org/docs/latest/models.html#storage-format for more info on MLflow model flavors.

Usage
```
mlflow_load_flavor(flavor, model_path)
```

Arguments
- **flavor**: An MLflow flavor object loaded by `mlflow_load_model`, with class loaded from the flavor field in an MLmodel file.
- **model_path**: The path to the MLflow model wrapped in the correct class.

mlflow_load_model  
Load MLflow Model

Description
Loads an MLflow model. MLflow models can have multiple model flavors. Not all flavors / models can be loaded in R. This method by default searches for a flavor supported by R/MLflow.

Usage
```
mlflow_load_model(model_uri, flavor = NULL, client = mlflow_client())
```

Arguments
- **model_uri**: The location, in URI format, of the MLflow model.
- **flavor**: Optional flavor specification (string). Can be used to load a particular flavor in case there are multiple flavors available.
- **client**: (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
mlflow_log_artifact

Details

The URI scheme must be supported by MLflow - i.e. there has to be an MLflow artifact repository corresponding to the scheme of the URI. The content is expected to point to a directory containing MLmodel. The following are examples of valid model uris:

- “file:///absolute/path/to/local/model” - “file:relativelpath/to/local/model” - “s3://my_bucket/path/to/model”
- “runs:/<mlflow_run_id>/run-relative/path/to/model” - “models:/<model_name>/<model_version>“
- “models:/<model_name>/<stage>“

For more information about supported URI schemes, see the Artifacts Documentation at https://www.mlflow.org/docs/latest/tracking.html#artifact-stores.

mlflow_log_artifact   Log Artifact

Description

Logs a specific file or directory as an artifact for a run.

Usage

mlflow_log_artifact(path, artifact_path = NULL, run_id = NULL, client = NULL)

Arguments

- path: The file or directory to log as an artifact.
- artifact_path: Destination path within the run’s artifact URI.
- run_id: Run ID.
- client: (Optional) An MLflow client object returned from mlflow_client. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

Details

When logging to Amazon S3, ensure that you have the s3:PutObject, s3:GetObject, s3:ListBucket, and s3:GetBucketLocation permissions on your bucket.

Additionally, at least the AWS_ACCESS_KEY_ID and AWS_SECRET_ACCESS_KEY environment variables must be set to the corresponding key and secrets provided by Amazon IAM.
mlflow_log_batch  
Log Batch

Description

Log a batch of metrics, params, and/or tags for a run. The server will respond with an error (non-200 status code) if any data failed to be persisted. In case of error (due to internal server error or an invalid request), partial data may be written.

Usage

```python
mlflow_log_batch(
    metrics = NULL,
    params = NULL,
    tags = NULL,
    run_id = NULL,
    client = NULL
)
```

Arguments

metrics  A dataframe of metrics to log, containing the following columns: "key", "value", "step", "timestamp". This dataframe cannot contain any missing ('NA') entries.
params  A dataframe of params to log, containing the following columns: "key", "value". This dataframe cannot contain any missing ('NA') entries.
tagst  A dataframe of tags to log, containing the following columns: "key", "value". This dataframe cannot contain any missing ('NA') entries.
run_id  Run ID.
client  (Optional) An MLflow client object returned from mlflow_client. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

mlflow_log_metric  
Log Metric

Description

Logs a metric for a run. Metrics key-value pair that records a single float measure. During a single execution of a run, a particular metric can be logged several times. The MLflow Backend keeps track of historical metric values along two axes: timestamp and step.
Usage

mlflow_log_metric(key, value, timestamp = NULL, step = NULL, run_id = NULL, client = NULL)

Arguments

key Name of the metric.
value Float value for the metric being logged.
timestamp Timestamp at which to log the metric. Timestamp is rounded to the nearest integer. If unspecified, the number of milliseconds since the Unix epoch is used.
step Step at which to log the metric. Step is rounded to the nearest integer. If unspecified, the default value of zero is used.
run_id Run ID.
client (Optional) An MLflow client object returned from mlflow_client. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

Description

Logs a model for this run. Similar to ‘mlflow_save_model()' but stores model as an artifact within the active run.

Usage

mlflow_log_model(model, artifact_path, ...)

Arguments

model The model that will perform a prediction.
artifact_path Destination path where this MLflow compatible model will be saved.
... Optional additional arguments passed to ‘mlflow_save_model()' when persisting the model. For example, ‘conda_env = /path/to/conda.yaml’ may be passed to specify a conda dependencies file for flavors (e.g. keras) that support conda environments.
**mlflow_log_param**  
*Log Parameter*

**Description**

Logs a parameter for a run. Examples are params and hyperparams used for ML training, or constant dates and values used in an ETL pipeline. A param is a STRING key-value pair. For a run, a single parameter is allowed to be logged only once.

**Usage**

```r
mlflow_log_param(key, value, run_id = NULL, client = NULL)
```

**Arguments**

- **key**: Name of the parameter.
- **value**: String value of the parameter.
- **run_id**: Run ID.
- **client**: (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

**mlflow_param**  
*Read Command-Line Parameter*

**Description**

Reads a command-line parameter passed to an MLflow project. MLflow allows you to define named, typed input parameters to your R scripts via the `mlflow_param` API. This is useful for experimentation, e.g. tracking multiple invocations of the same script with different parameters.

**Usage**

```r
mlflow_param(name, default = NULL, type = NULL, description = NULL)
```

**Arguments**

- **name**: The name of the parameter.
- **default**: The default value of the parameter.
- **type**: Type of this parameter. Required if `default` is not set. If specified, must be one of "numeric", "integer", or "string".
- **description**: Optional description for the parameter.
Examples

```r
## Not run:
# This parametrized script trains a GBM model on the Iris dataset and can be run as an MLflow project. You can run this script (assuming it's saved at /some/directory/params_example.R)
# with custom parameters via:
# mlflow_run(entry_point = "params_example.R", uri = "/some/directory",
# parameters = list(num_trees = 200, learning_rate = 0.1))
install.packages("gbm")
library(mlflow)
library(gbm)
# define and read input parameters
num_trees <- mlflow_param(name = "num_trees", default = 200, type = "integer")
lr <- mlflow_param(name = "learning_rate", default = 0.1, type = "numeric")
# use params to fit a model
ir.adaboost <- gbm(Species ~., data=iris, n.trees=num_trees, shrinkage=lr)
## End(Not run)
```

---

### mlflow_predict

*Generate Prediction with MLflow Model*

#### Description

Performs prediction over a model loaded using `mlflow_load_model()`, to be used by package authors to extend the supported MLflow models.

#### Usage

```r
mlflow_predict(model, data, ...)
```

#### Arguments

- **model**: The loaded MLflow model flavor.
- **data**: A data frame to perform scoring.
- **...**: Optional additional arguments passed to underlying predict methods.

---

### mlflow_register_external_observer

*Register an external MLflow observer*
**mlflow_rename_experiment**

### Description

Registers an external MLflow observer that will receive a `register_tracking_event(event_name, data)` callback on any model tracking event such as "create_run", "delete_run", or "log_metric". Each observer should have a `register_tracking_event(event_name, data)` callback accepting a character vector `event_name` specifying the name of the tracking event, and `data` containing a list of attributes of the event. The callback should be non-blocking, and ideally should complete instantaneously. Any exception thrown from the callback will be ignored.

### Usage

```r
mlflow_register_external_observer(observer)
```

### Arguments

- **observer**
  
  The observer object (see example)

### Examples

```r
library(mlflow)

observer <- structure(list())
observer$register_tracking_event <- function(event_name, data) {
  print(event_name)
  print(data)
}
mlflow_register_external_observer(observer)
```

---

**mlflow_rename_experiment**

### Rename Experiment

### Description

Renames an experiment.

### Usage

```r
mlflow_rename_experiment(new_name, experiment_id = NULL, client = NULL)
```

### Arguments

- **new_name**
  
  The experiment’s name will be changed to this. The new name must be unique.

- **experiment_id**
  
  ID of the associated experiment. This field is required.

- **client**
  
  (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
### mlflow_rename_registered_model

*Rename a registered model*

**Description**

Renames a model in the Model Registry.

**Usage**

```r
mlflow_rename_registered_model(name, new_name, client = NULL)
```

**Arguments**

- `name`: The current name of the model.
- `new_name`: The new name for the model.
- `client` *(Optional)*: An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

### mlflow_restore_experiment

*Restore Experiment*

**Description**

Restores an experiment marked for deletion. This also restores associated metadata, runs, metrics, and params. If experiment uses FileStore, underlying artifacts associated with experiment are also restored.

**Usage**

```r
mlflow_restore_experiment(experiment_id, client = NULL)
```

**Arguments**

- `experiment_id`: ID of the associated experiment. This field is required.
- `client` *(Optional)*: An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

**Details**

Throws ‘RESOURCE DOES NOT EXIST’ if the experiment was never created or was permanently deleted.
### mlflow_restore_run

**Restore a Run**

**Description**

Restores the run with the specified ID.

**Usage**

```r
mlflow_restore_run(run_id, client = NULL)
```

**Arguments**

- `run_id` (Run ID.)
- `client` (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

### mlflow_rfunc_serve

**Serve an RFunc MLflow Model**

**Description**

Serves an RFunc MLflow model as a local REST API server. This interface provides similar functionality to “mlflow models serve” cli command, however, it can only be used to deploy models that include RFunc flavor. The deployed server supports standard mlflow models interface with /ping and /invocation endpoints. In addition, R function models also support deprecated /predict endpoint for generating predictions. The /predict endpoint will be removed in a future version of mlflow.

**Usage**

```r
mlflow_rfunc_serve(  
  model_uri,  
  host = "127.0.0.1",  
  port = 8090,  
  daemonized = FALSE,  
  browse = !daemonized,  
  ...
)
```
mlflow_run

Arguments

- **model_uri**: The location, in URI format, of the MLflow model.
- **host**: Address to use to serve model, as a string.
- **port**: Port to use to serve model, as numeric.
- **daemonized**: Makes `httpuv` server daemonized so R interactive sessions are not blocked to handle requests. To terminate a daemonized server, call `httpuv::stopDaemonizedServer()` with the handle returned from this call.
- **browse**: Launch browser with serving landing page?
- ... Optional arguments passed to `mlflow_predict()`.

Details

The URI scheme must be supported by MLflow - i.e. there has to be an MLflow artifact repository corresponding to the scheme of the URI. The content is expected to point to a directory containing MLmodel. The following are examples of valid model uris:

- "file:///absolute/path/to/local/model" - "file:relative/path/to/local/model" - "s3://my_bucket/path/to/model"
- "runs:/<mlflow_run_id>/run-relative/path/to/model" - "models:/<model_name>/<model_version>"
- "models:/<model_name>/<stage>"

For more information about supported URI schemes, see the Artifacts Documentation at https://www.mlflow.org/docs/latest/tracking.html#artifact-stores.

Examples

```r
## Not run:
library(mlflow)

# save simple model with constant prediction
mlflow_save_model(function(df) 1, "mlflow_constant")

# serve an existing model over a web interface
mlflow_rfunc_serve("mlflow_constant")

# request prediction from server
httr::POST("http://127.0.0.1:8090/predict/")

## End(Not run)
```

mlflow_run

Run an MLflow Project

Description

Wrapper for the `mlflow run` CLI command. See https://www.mlflow.org/docs/latest/cli.html#mlflow-run for more info.
Usage

```r
mlflow_run(
  uri = ".",
  entry_point = NULL,
  version = NULL,
  parameters = NULL,
  experiment_id = NULL,
  experiment_name = NULL,
  backend = NULL,
  backend_config = NULL,
  env_manager = NULL,
  storage_dir = NULL
)
```

Arguments

- **uri** A directory containing modeling scripts, defaults to the current directory.
- **entry_point** Entry point within project, defaults to ‘main’ if not specified.
- **version** Version of the project to run, as a Git commit reference for Git projects.
- **parameters** A list of parameters.
- **experiment_id** ID of the experiment under which to launch the run.
- **experiment_name** Name of the experiment under which to launch the run.
- **backend** Execution backend to use for run.
- **backend_config** Path to JSON file which will be passed to the backend. For the Databricks backend, it should describe the cluster to use when launching a run on Databricks.
- **env_manager** If specified, create an environment for the project using the specified environment manager. Available options are ‘local’, ‘virtualenv’, and ‘conda’.
- **storage_dir** Valid only when ‘backend’ is local. MLflow downloads artifacts from distributed URIs passed to parameters of type ‘path’ to subdirectories of ‘storage_dir’.

Value

The run associated with this run.

Examples

```r
## Not run:
# This parametrized script trains a GBM model on the Iris dataset and can be run as an MLflow
# project. You can run this script (assuming it's saved at /some/directory/params_example.R)
# with custom parameters via:
# mlflow_run(entry_point = "params_example.R", uri = "/some/directory",
# parameters = list(num_trees = 200, learning_rate = 0.1))
install.packages("gbm")
library(mlflow)
library(gbm)
```
# define and read input parameters
num_trees <- mlflow_param(name = "num_trees", default = 200, type = "integer")
lr <- mlflow_param(name = "learning_rate", default = 0.1, type = "numeric")

# use params to fit a model
ir.adaboost <- gbm(Species ~., data=iris, n.trees=num_trees, shrinkage=lr)

## End(Not run)

mlflow_save_model.crate

Save Model for MLflow

Description

Saves model in MLflow format that can later be used for prediction and serving. This method is
generic to allow package authors to save custom model types.

Usage

## S3 method for class 'crate'
mlflow_save_model(model, path, model_spec = list(), ...)

mlflow_save_model(model, path, model_spec = list(), ...)

## S3 method for class 'H2OModel'
mlflow_save_model(model, path, model_spec = list(), conda_env = NULL, ...)

## S3 method for class 'keras.engine.training.Model'
mlflow_save_model(model, path, model_spec = list(), conda_env = NULL, ...)

## S3 method for class 'xgb.Booster'
mlflow_save_model(model, path, model_spec = list(), conda_env = NULL, ...)

Arguments

model The model that will perform a prediction.
path Destination path where this MLflow compatible model will be saved.
model_spec MLflow model config this model flavor is being added to.
... Optional additional arguments.
conda_env Path to Conda dependencies file.
**mlflow_search_experiments**

*Search Experiments*

**Description**

Search for experiments that satisfy specified criteria.

**Usage**

```r
mlflow_search_experiments(
  filter = NULL,
  experiment_view_type = c("ACTIVE_ONLY", "DELETED_ONLY", "ALL"),
  max_results = 1000,
  order_by = list(),
  page_token = NULL,
  client = NULL
)
```

**Arguments**

- `filter` A filter expression used to identify specific experiments. The syntax is a subset of SQL which allows only ANDing together binary operations. Examples: "attribute.name = 'MyExperiment'", "tags.problem_type = 'iris_regression'"
- `experiment_view_type` Experiment view type. Only experiments matching this view type are returned.
- `max_results` Maximum number of experiments to retrieve.
- `order_by` List of properties to order by. Example: "attribute.name".
- `page_token` Pagination token to go to the next page based on a previous query.
- `client` (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

---

**mlflow_search_registered_models**

*List registered models*

**Description**

Retrieves a list of registered models.
mlflow_search_registered_models

Usage
mlflow_search_registered_models(
    filter = NULL,
    max_results = 100,
    order_by = list(),
    page_token = NULL,
    client = NULL
)

Arguments

filter A filter expression used to identify specific registered models. The syntax is a subset of SQL which allows only ANDing together binary operations. Example: "name = 'my_model_name' and tag.key = 'value1'"

max_results Maximum number of registered models to retrieve.

order_by List of registered model properties to order by. Example: "name".

page_token Pagination token to go to the next page based on a previous query.

client (Optional) An MLflow client object returned from mlflow_client. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

mlflow_search_runs

Search Runs

Description
Search for runs that satisfy expressions. Search expressions can use Metric and Param keys.

Usage
mlflow_search_runs(
    filter = NULL,
    run_view_type = c("ACTIVE_ONLY", "DELETED_ONLY", "ALL"),
    experiment_ids = NULL,
    order_by = list(),
    client = NULL
)

Arguments

filter A filter expression over params, metrics, and tags, allowing returning a subset of runs. The syntax is a subset of SQL which allows only ANDing together binary operations between a param/metric/tag and a constant.

run_view_type Run view type.
mlflow_server

experiment_ids  List of string experiment IDs (or a single string experiment ID) to search over. Attempts to use active experiment if not specified.

order_by  List of properties to order by. Example: "metrics.acc DESC".

client  (Optional) An MLflow client object returned from mlflow_client. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

mlflow_server  Run MLflow Tracking Server

Description

Wrapper for 'mlflow server'.

Usage

mlflow_server(
  file_store = "mlruns",
  default_artifact_root = NULL,
  host = "127.0.0.1",
  port = 5000,
  workers = NULL,
  static_prefix = NULL,
  serve_artifacts = FALSE
)

Arguments

file_store  The root of the backing file store for experiment and run data.

default_artifact_root  Local or S3 URI to store artifacts in, for newly created experiments.

host  The network address to listen on (default: 127.0.0.1).

port  The port to listen on (default: 5000).

workers  Number of gunicorn worker processes to handle requests (default: 4).

static_prefix  A prefix which will be prepended to the path of all static paths.

serve_artifacts  A flag specifying whether or not to enable artifact serving (default: FALSE).
mlflow_set_experiment  Set Experiment

Description
Sets an experiment as the active experiment. Either the name or ID of the experiment can be provided. If the a name is provided but the experiment does not exist, this function creates an experiment with provided name. Returns the ID of the active experiment.

Usage
```
mlflow_set_experiment(
    experiment_name = NULL,
    experiment_id = NULL,
    artifact_location = NULL
)
```

Arguments
- `experiment_name`: Name of experiment to be activated.
- `experiment_id`: ID of experiment to be activated.
- `artifact_location`: Location where all artifacts for this experiment are stored. If not provided, the remote server will select an appropriate default.

mlflow_set_experiment_tag  Set Experiment Tag

Description
Sets a tag on an experiment with the specified ID. Tags are experiment metadata that can be updated.

Usage
```
mlflow_set_experiment_tag(key, value, experiment_id = NULL, client = NULL)
```

Arguments
- `key`: Name of the tag. All storage backends are guaranteed to support key values up to 250 bytes in size. This field is required.
- `value`: String value of the tag being logged. All storage backends are guaranteed to support key values up to 5000 bytes in size. This field is required.
mlflow_set_model_version_tag

`Set Model version tag`

**Description**

Set a tag for the model version. When stage is set, tag will be set for latest model version of the stage. Setting both version and stage parameter will result in error.

**Usage**

```python
mlflow_set_model_version_tag(
    name,
    version = NULL,
    key = NULL,
    value = NULL,
    stage = NULL,
    client = NULL
)
```

**Arguments**

- `name` : Registered model name.
- `version` : Registered model version.
- `key` : Tag key to log. key is required.
- `value` : Tag value to log. value is required.
- `stage` : Registered model stage.
- `client` : (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
mlflow_set_tag

**Set Tag**

**Description**
Sets a tag on a run. Tags are run metadata that can be updated during a run and after a run completes.

**Usage**

```python
mlflow_set_tag(key, value, run_id = NULL, client = NULL)
```

**Arguments**

- **key**
  Name of the tag. Maximum size is 255 bytes. This field is required.
- **value**
  String value of the tag being logged. Maximum size is 500 bytes. This field is required.
- **run_id**
  Run ID.
- **client**
  (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

mlflow_set_tracking_uri

**Set Remote Tracking URI**

**Description**
Specifies the URI to the remote MLflow server that will be used to track experiments.

**Usage**

```python
mlflow_set_tracking_uri(uri)
```

**Arguments**

- **uri**
  The URI to the remote MLflow server.
mlflow_start_run

Description

Starts a new run. If 'client' is not provided, this function infers contextual information such as source name and version, and also registers the created run as the active run. If 'client' is provided, no inference is done, and additional arguments such as 'start_time' can be provided.

Usage

mlflow_start_run(
  run_id = NULL,
  experiment_id = NULL,
  start_time = NULL,
  tags = NULL,
  client = NULL,
  nested = FALSE
)

Arguments

run_id If specified, get the run with the specified UUID and log metrics and params under that run. The run’s end time is unset and its status is set to running, but the run’s other attributes remain unchanged.

experiment_id Used only when 'run_id' is unspecified. ID of the experiment under which to create the current run. If unspecified, the run is created under a new experiment with a randomly generated name.

start_time Unix timestamp of when the run started in milliseconds. Only used when 'client' is specified.

tags Additional metadata for run in key-value pairs. Only used when 'client' is specified.

client (Optional) An MLflow client object returned from mlflow_client. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

nested Controls whether the run to be started is nested in a parent run. ‘TRUE’ creates a nest run.

Examples

## Not run:
with(mlflow_start_run(), {
  mlflow_log_metric("test", 10)
})
mlflow_transition_model_version_stage

*Transition ModelVersion Stage*

## Description

Transition a model version to a different stage.

## Usage

```r
mlflow_transition_model_version_stage(
  name,
  version,
  stage,
  archive_existing_versions = FALSE,
  client = NULL
)
```

## Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>name</td>
<td>Name of the registered model.</td>
</tr>
<tr>
<td>version</td>
<td>Model version number.</td>
</tr>
<tr>
<td>stage</td>
<td>Transition <code>model_version</code> to this stage.</td>
</tr>
<tr>
<td>archive_existing_versions</td>
<td>(Optional) An MLflow client object returned from <code>mlflow_client</code>. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.</td>
</tr>
<tr>
<td>client</td>
<td>(Optional) An MLflow client object returned from <code>mlflow_client</code>. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.</td>
</tr>
</tbody>
</table>

mlflow_ui

*Run MLflow User Interface*

## Description

Launches the MLflow user interface.

## Usage

```r
mlflow_ui(client, ...)
```
**mlflow_update_model_version**

*Update model version*

### Description

Updates a model version

### Usage

```
mlflow_update_model_version(name, version, description, client = NULL)
```

### Arguments

- **name**
  - Name of the registered model.

- **version**
  - Model version number.

- **description**
  - Description of this model version.

- **client**
  - (Optional) An MLflow client object returned from `mlflow_client`. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.

### Examples

```
## Not run:
library(mlflow)

# launch mlflow ui locally
mlflow_ui()

# launch mlflow ui for existing mlflow server
mlflow_set_tracking_uri("http://tracking-server:5000")
mlflow_ui()

## End(Not run)
```
mlflow_update_registered_model

Update a registered model

Description
Updates a model in the Model Registry.

Usage
mlflow_update_registered_model(name, description, client = NULL)

Arguments
- name: The name of the registered model.
- description: The updated description for this registered model.
- client: (Optional) An MLflow client object returned from mlflow_client. If specified, MLflow will use the tracking server associated with the passed-in client. If unspecified (the common case), MLflow will use the tracking server associated with the current tracking URI.
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