Model Setup Quick Guide

We will use the model AMIRIS to demonstrate the application of ML-based price forecasting in energy models. AMIRIS is a JAVA application configured via Python scripts. The price forecasting is implemented in Python as well.

Requirements

To run this example, you need **Python 3.11 or higher** and a **Java Development Kit JDK 11 or higher**.

Java

If you are not sure that you have Java available in the right version. Check if your system has Java already installed by opening a command line and entering `java --version` (or `java -version` on some systems). This should show your Java version if Java was found. If you get a "command not found" error, or if your Java version is less than 11, please download and install a recent JDK from e.g. here.

Python

You will need a Python-enabled shell with pip. You can test if you have Python available by using the command `python --version`. This should show your Python version if the Python command was found. Make sure the version of your Python is at least 3.11. Note that if you use a Python environment manager you can have several Python versions on your system side by side. If you do not have a Python environment manager installed on your system, you may use e.g. conda, or mamba, or Poetry.

Environment

In case you do not have any experience with creating a Python environment, we recommend to use conda. Install conda, start the conda prompt or powershell and enter:

1. `conda create -n amirisEnv python=3.11`
2. `conda activate amirisEnv`

AMIRIS-Py

AMIRIS-Py enables you to install and execute AMIRIS with one command. To install it, make sure you are in your AMIRIS Python environment (called "amirisEnv" above) and run

```
pip install amirispy
```

This will grant you a new shell command `amiris`.

Download AMIRIS

1. Create a new folder on your disk called, e.g., "AMIRIS": `mkdir AMIRIS`
2. Navigate to this newly created folder: `cd AMIRIS`

3. Activate your Python-enabled shell that includes amiris-py: `conda activate amirisEnv`
4. Download the latest AMIRIS build use: `amiris download`
5. Check the model runs: `amiris run -s examples/demo/Simple/Scenario.yaml -o Simple`

This should result in the lines:

```
<DateTime>:: Simulation completed after executing 291 ticks in 0.XY seconds.
16:39:07 – PRINT – Successfully executed AMIRIS. See your results in 'Simple'
```

If the model does not run as expected, you can contact use via amiris@dlr.de

Machine-Learning Setup

To use AMIRIS with machine-learning forecasting models, install the price-forecasting model wrapper. You can use the same Python environment.

1. `pip install amiris-priceforecast[transformer,mae]`

Finally, download the latest trained ML models from the Symposium's page. At the bottom of the page, you will find an attachmend named "ML-Models.zip". Download and extract that ZIP file and put its contents into the AMIRIS folder you created above.