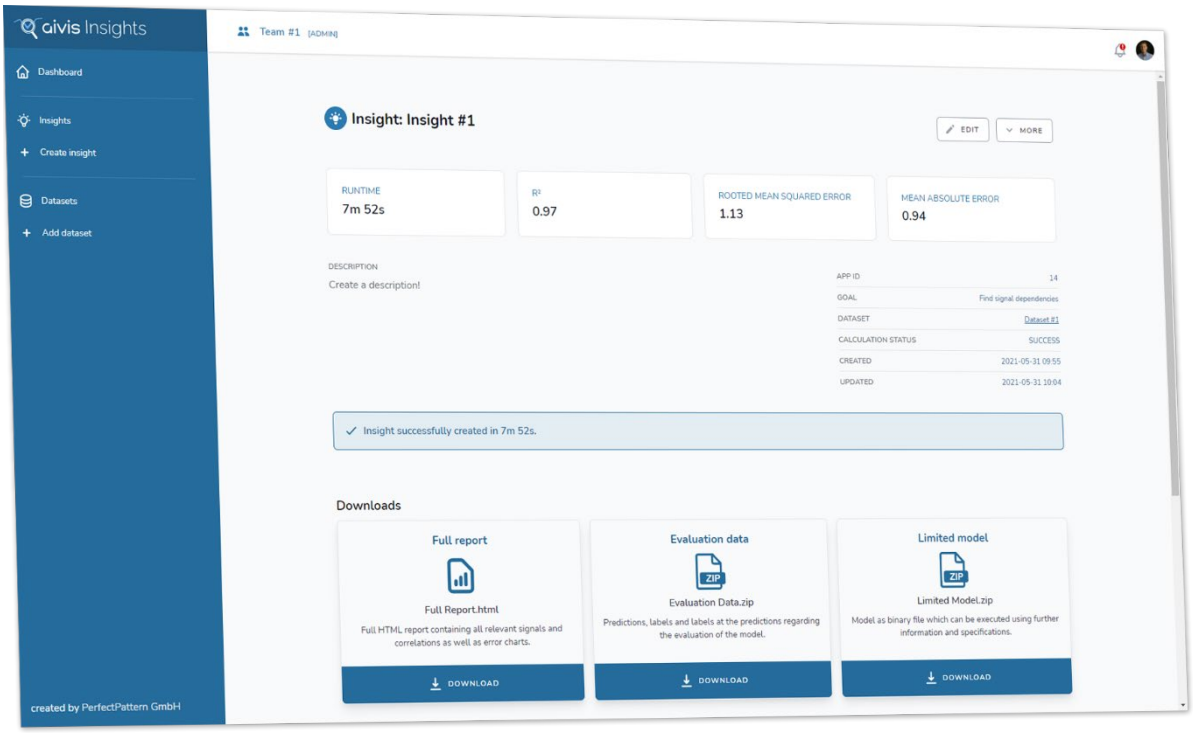
aivis Insights App

Official website: https://perfectpattern.de/insights-app

Getting started Guide

Version Sep. 2021



In advance

This quick start tutorial guides you through the process of making your first predictions with the aivis insights app. The only prerequisite is that you have an account. If you don't have one already, you can register at https://insights.aivis.cloud/register.

This tutorial uses time series data. This means that each value is connected to a timestamp. In case of sensors, this would usually be the time at which the measurement was made. If your data is not time-related, this tutorial will still be useful, as the process for both data types are widely identical, apart from a few extra steps you need to take for time series data.

Note that while we will be using the term "sensor" here, aivis Insights can process any type of data.

The Dashboard

Once you have successfully created an account and are logged in, you will see the dashboard. From here, you can start the necessary steps in order to make predictions. The first one will be to import a dataset.

Creating a dataset

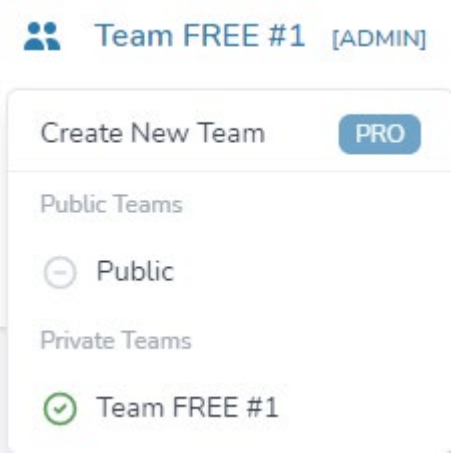
Here, you have two possibilities. You can either use one of the example datasets we have provided, or you can use your own data.

Using an example dataset

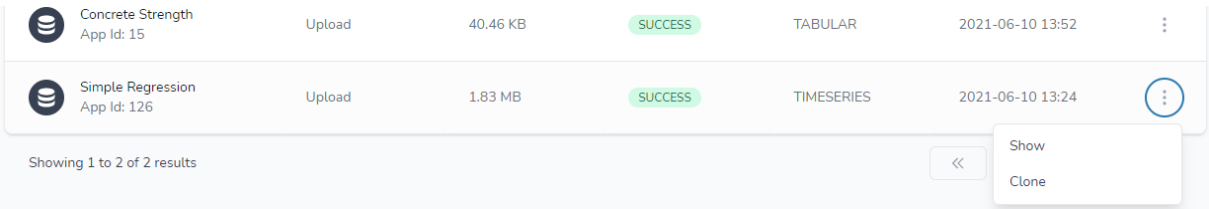
If you don't have data of your own or just want some especially quick results, we have prepared some datasets that help you make predictions in no time. You can access them by using the "Teams" feature.

Teams are a convenient way of sharing datasets, as datasets are available to all team members and can easily be copied back and forth between teams. Our example datasets belong to the "Public" team, which everyone has a read-access to. To fetch your dataset, follow these steps:

1. Switch teams by clicking on your current team, which is displayed in the upper left hand corner of your screen. This will unfold your list of available teams. Here, choose the "Public" team.



2. In the sidebar, click on "Datasets".
3. Click on the three dots next to the "Simple Regression" dataset and choose "clone". In case you belong to more than one private team, be sure to choose the right one to clone to.



4. Switch back to your private team, and again click on the "Datasets" tab on the left. You will then see a copy of the "Simple Regression" dataset. Now you are already set up for the next step.

Uploading your own data

Instead of using an example dataset, you can also start with your own data. First, make sure that your data conforms to our data specifications. Here, there are two possibilities. You can either upload all sensor data in a single file or upload one file per sensor. In case of a single file, it must

- be in CSV format.
- contain a header with unique entries. Apart from the columns with the timestamps, these will be the names of your sensors.
- The first column must contain the timestamps. These should be denoted in millisecond Epoch time, or in other words, the milliseconds that have passed since 1 January 1970 (UTC).
- Apart from the timestamps, the rows contain the values of the sensors, but only if they were measured at that specific point in time. Otherwise, the cells should be left empty.

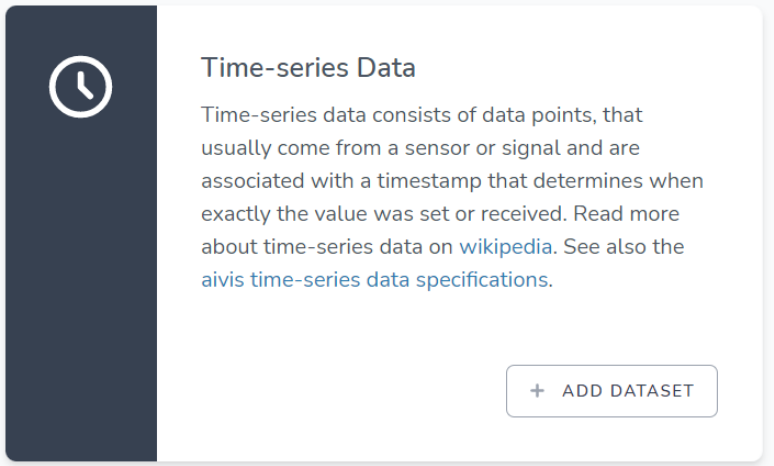
On the other hand, you may prefer uploading one file per sensor. Either way, the end result will be the same. Just remember that the two ways of uploading cannot be combined. In the case of a single file per sensor, the files

- must be in CSV format.
- cannot contain a header. The sensor name is defined by the name of the CSV file itself.
- The first column consists of the timestamps, which are also denoted in millisecond Epoch time.
- The second column contains the sensor values. Each row is required to have a sensor value.

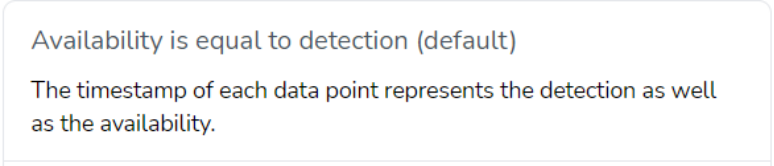
These are just the most important points. Make sure to check the full details here. Once your data is in the right format, take the following steps.

Tip: You can use this usefull tool for converting your data into the aivis format.

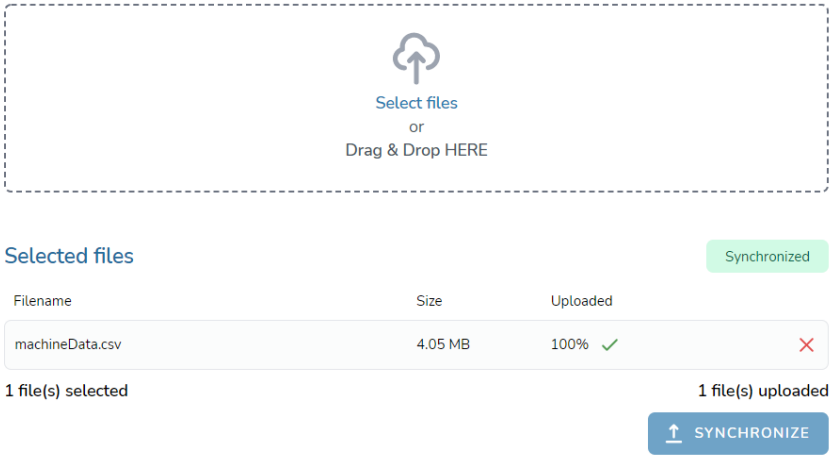
1. In the sidebar, click on “Add dataset” and choose “Time Series Data”.



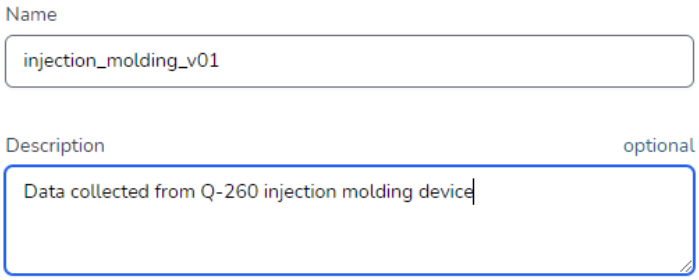
2. On the next page, choose “Availability is equal to detection”.



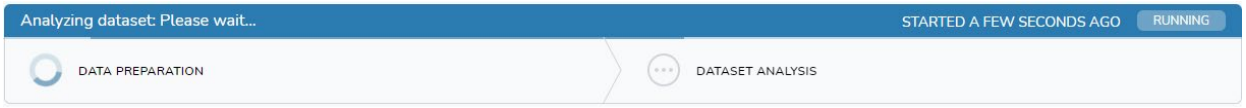
3. Choose “Upload the dataset as CSV files”.
4. Drag and drop your CSV files into the upload panel or select them in your system’s file explorer. Then, press “Synchronize” in order to upload the data.



5. Press “Next” and enter a name for your dataset.



6. Click on “Finish” and sit back while we validate and analyze your data. This shouldn’t take longer than a few minutes.



7. If the everything was formatted correctly, you will then see an overview over your dataset, which you can revisit anytime via the “Datasets” button on the left.

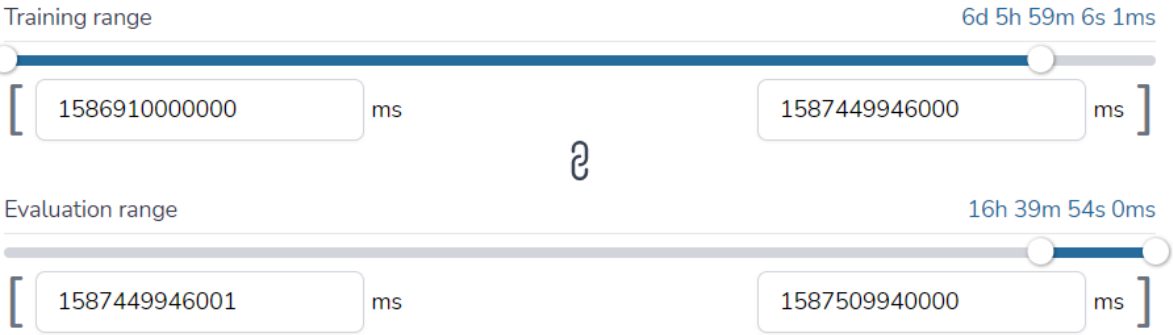
Now that you have uploaded your first dataset, you can take already get a feel for your data. Click on the individual sensors to see their behavior in form of a graph and various other statistical evaluations.

Creating an Insight

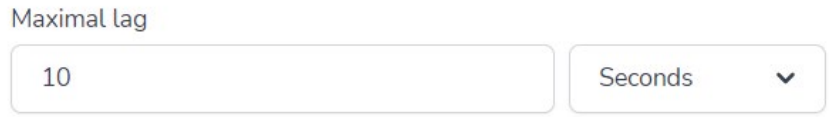
Now that you have a dataset, you are ready to make some predictions with it.

1. In the side menu, click on “Create insight”.
2. Choose “Find signal dependencies”.
3. **Select the dataset** you have just created.
4. **Select your target sensor** from the list of sensors. This sensor provides the values that will be predicted.

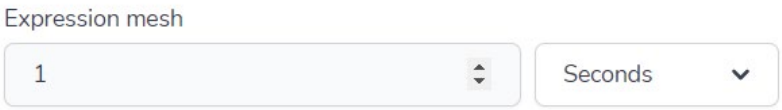
5. In the next step, you can **optionally exclude some of the remaining sensors**. You should do this if they contain information that would give away the result and wouldn’t be known at the prediction time. For example, in the case of predicting lab measurements, you would typically exclude other related values that came from the same lab measurement.
6. **Set the training and evaluation range.** Usually, the last 10-20 percent of records would be used for evaluation. This means that the resulting model will be evaluated by predicting the sensor values for this time range. These predicted values are then compared to the actual values.



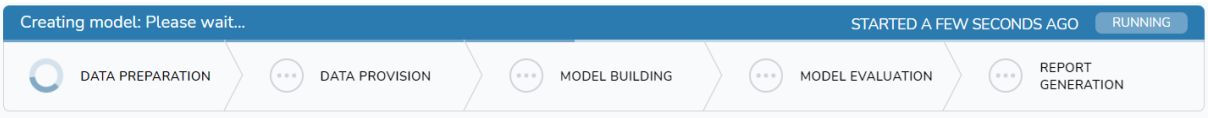
7. **Add additional evaluation points.** This option ensures that predictions cover the whole evaluation range, regardless of whether existing values are spread evenly or not. The additional evaluation points will be equally distributed throughout the evaluation time range. If your existing values are sufficiently distributed, choose a lower value such as the minimum allowed value, which is 100.
8. **Set the maximal lag**. This should be the amount of time that data from the past affects the predicted value. Start out with lower values if possible, as this value has a large impact on the calculation effort. Depending on the number of sensors in your data, a value that is 10 - 20 times the size of your expression mesh is usually still OK.



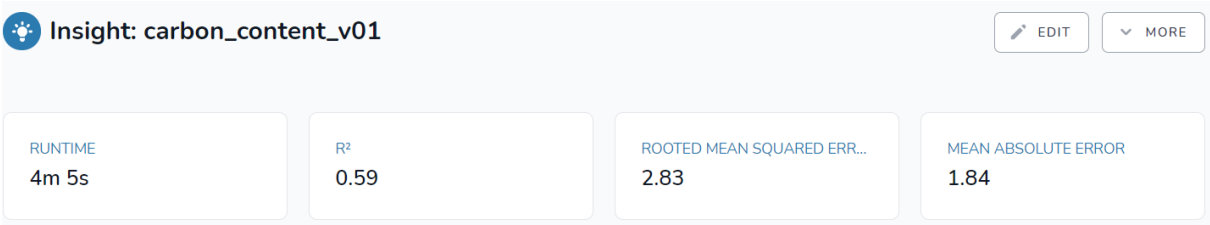
9. **Set the expression mesh**. If your sensor was measured at a fixed frequency as once per second, it makes sense to base the expression mesh on this (i.e., one second). As a more general rule of thumb: If you think that fluctuations on the scale of 10 milliseconds are not relevant but those at one second are, then set the expression mesh to one second. Using a smaller mesh gives you more detail, but also leads to longer computation times.



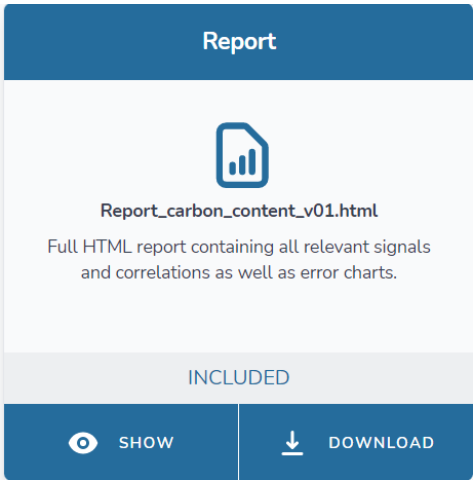
10. Click “Next” and enter a name for the Insight.
11. Click on “Finish” and wait for aivis to automatically train a high quality model for you. In most cases, this shouldn’t take longer than a few minutes. However, depending on the size of your dataset, now could be a good time for a cup of coffee. You will receive a notification via email as soon as the calculation has finished.



12. Once training and evaluation have finished, you will receive an overview over the performance of the model.



13. For more detailed information, such as the sensor correlations or a visual comparison of predictions and labels, check out the full report. You can access it at the bottom of the page.



You may be surprised by what aivis can deduct from your data and the information that it can extract. If you want to harness the power of these predictions in a productive setting, you can upgrade to a pro account in order to get access to the full model.