

AutoDetect: Automatic detection of spores in images

By **Alain Henriot** with the assistance of **Sylvain Ard** for AI.



This version 6.1 of *Piximeter* works identically to the previous standard version (5.10). All your settings and standards remain valid. However, it adds an innovative feature: **the automatic detection of spores** (or similar objects) present in the images. A feature made possible thanks to artificial intelligence (AI) developed by **Sylvain Ard**. Using the most advanced technologies, he patiently taught it to recognize the outline of many mushroom spores (but not all...).

Here, opening the images in the *Meter* triggers the AI and, just a few short seconds later, the **AutoDetect** function is ready (in green in the status bar at the bottom) and the user can then select the appropriate spores by simply clicking on each of them. The detection of their measurements is immediate. No need to meticulously trace their two rectangular axes!

The choice of representative spores remains with humans.

Each spore thus selected is **a proposal** that remains awaiting validation by the user. The **space bar** on the keyboard or **a mouse click** outside the spore validates this proposal. The measurements are then transmitted to the *Formulator*. If the proposal is not correct, **a new click** on the spore provides **a new proposal**. Several successive proposals are possible,

displayed under "Axis" on the left panel. If none is acceptable, **the Delete key** on the keyboard allows you to cancel this selection.

The Alt key to the left of the keyboard's space bar allows you to switch from automatic detection mode to standard manual mode and vice versa at any time. This gives the user the ability to **temporarily disengage the AI** and take full control.

As an example, the figure above shows the axes automatically found by the AI on the image. Note that this is only calibrated by a test standard and that the measurements expressed are not meaningful. All your usual settings and standards are preserved and validated in this version 6.

To implement this feature of *Piximeter 6* you will need to install the AI:

Download, save and run the corresponding file (**IA_Setup.exe**).

The process may take a few minutes.

https://amyco.fr/AIArd/IA_Setup.exe

As with *Piximeter* , the execution of the AI code is protected by Windows. You will need to explicitly agree to its execution. These programs are free of any viruses or information capture that could damage your computer or harm your privacy.

Piximeter and AI software work on Windows 10 and Windows 11, 64-bit.

Detection can be imperfect depending on image quality and spore shape. But technology is advancing rapidly... And *Piximeter* allows for easy manual correction of tracings.

Version 6.1 Release Notes

General information

The " Activate AutoDetect " option , which is checked by default on the *Piximeter 6* Settings panel, allows *you to* implement or not this new functionality as soon as the AI is installed.

Piximeter 6 can work without AI installed, but in this case the **AutoDetect** function is disabled.

Extensions of AI are being considered to generalize and further improve detection.

Axis management

Axis rectification remains possible in AutoDetect mode as **well as** in **Manual** mode :

1. Press the Ctrl key on the keyboard and move the cursor closer to one end of the axis to be modified until its appearance changes,
2. Press and release the left mouse button Ctrl,
3. Move the cursor to the desired point,
4. Release the mouse.

Deleting **an axis** is made easy by right-clicking on its **length label** .

Deleting **two coupled axes** is done by right-clicking on their **coupling point** (in blue).

Presentation of the formula

Depending on the screen characteristics, the formula display may not be adequate. **The mouse wheel** on it allows you to change the font size and thus adjust its presentation as best as possible.