

AI in marine sciences: An open-access integrated environment for automated classification of phytoplankton images

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What is phytoplankton?

Phytoplankton is the single-cell algae at the basis of marine food webs and an essential indicator of ecosystem health



FlowCam use case

Objective: monitor phytoplankton under the LifeWatch RI using automated image techniques.

Challenge: Speed up taxonomists' job of manually labelling ~350,000 images/year

Solution

1. Use of automated imaging and machine learning to build a set of over 2.2 million annotated FlowCam images
2. Taxonomists fine-tuned the trained classifiers correcting wrong model predictions
3. Publish the open-access dataset and the trained classifiers for the benefit of marine monitoring
4. Build a user-friendly module allowing users to predict FlowCam images using pre-trained models and train classifiers on their own image input
5. Leverage the iMagine platform to host the FlowCam module, offering an integrated environment with all source code and a graphical user interface.
This module provides tools for post hoc analysis of model performance and code for image transformation and augmentation

What's next

1. Facilitate many marine researchers in the application of automated classification of phytoplankton imaging data.
2. Researchers and monitoring programs are encouraged to make use of the FlowCam service and the iMagine AI platform to contribute to more efficient biomonitoring.



Discover the
Use Case and the
iMagine AI Platform



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CONSORTIUM: 24 partners from Belgium, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Slovakia, Spain, Turkey
12 connected RIs



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