Contribution ID: **18**   Type: **Oral (16mins + 4 mins)**

Computer vision for laboratory assistance tools

Thursday, March 7, 2024 1:30 PM (20 minutes)

This study focuses on the use of computer vision algorithms to improve the efficiency of laboratory tasks, data collection, and process monitoring. By deploying computer vision systems in the laboratory environment, various tasks can be automated and streamlined. This includes recognizing and tracking hardware, verifying positioning and providing AR modelling.

Here we present a project aimed at assisting laser laboratory operations by locating and uniquely identify equipment while tracking the relative position, as well as providing real-time assistance by accessing parameter settings and relevant information. The program combines object detection with optical character recognition and space mapping techniques. The real-time object classification is performed using the YOLO (You Only Look Once) model [1], a single-shot detector based on a Convolutional Neural Network backbone to form image features.

This contribution also discusses the challenges and potential limitations associated with implementing computer vision systems in laboratories, such as hardware requirements, data management concerns, and the need for machine learning models fine-tuned to the specific laboratory environment.

In conclusion, the integration of computer vision techniques into laboratories represents a promising step towards more efficient and capable laboratory assistants.

[1] Jocher, G., Chaurasia, A., & Qiu, J. (2023). YOLO by Ultralytics (Version 8.0.0). https://github.com/ultralytics/ultralytics

Primary Keyword

Secondary Keyword

Tertiary Keyword

Primary authors: VEGLIA, Bianca (DESY); LEMERY, Francois (DESY); MAYET, Frank (DESY); AGAPOV, Ilya (DESY); FLOETTMANN, Klaus (DESY)

Presenter: VEGLIA, Bianca (DESY)

Session Classification: Tools for Humans

Track Classification: Tools for Humans