GULBENKIAN CIÊNCIA

Press Release

Artificial Intelligence aids the analysis of microscopy images

New platform detects cellular traits associated with diseases like cancer or infection

Oeiras, 7 May 2021 - Researchers develop a new platform of artificial intelligence able to explore microscopy data and hasten new biomedical discoveries in health and disease. The platform—ZeroCostDL4Mic—is available in open access and allows anyone with little to no experience in coding to quickly use it and develop powerful actions, like identifying cellular traits and characterize their relation to diseases like cancer or infection.

Despite the numerous innovations surrounding the technology of artificial intelligence, it still contains some barriers, both in the complexity to form artificial neural networks and in the access to these powerful computational tools. These are problems commonly faced by most biologists, doctors, pathologists, and microscopy users. With the aim of democratizing science, one of the missions of Instituto Gulbenkian de Ciência (IGC), a team led by Ricardo Henriques, from IGC, together with the Jacquemet laboratory (Abo Akademi University, Turku, Finlândia), and in collaboration with an international consortium of 12 laboratories spanning two different continents, developed this completely accessible and free platform.

ZeroCostDL4Mic allows researchers with little to no experience in coding to practice, validate and use artificial neural networks. Simultaneously, it guides them on acquiring more knowledge and using deep learning.

By facilitating the way in which researchers apply artificial intelligence in their projects "ZeroCostDL4Mic will serve as a 'driving force' towards integrating cutting edge computational approaches to deal with some of the most important questions that need to be tackled in biomedical research", Ricardo Henriques says.

Using Google services (Google Colab and Google Drive), ZeroCostDL4Mic offers free virtually based computational resources to analyse imaging data through artificial intelligence. In practice, the new platform is a collection of self-explanatory artificial intelligence algorithms, presented in a graphical interface that is easy to use and requires only a web browser to work. All calculations are done in the cloud, avoiding the need of buying or installing graphical processing units or associated software. With this platform, some clicks and a simple workflow, researchers can

install all the software dependencies that are needed, upload their imaging data, and execute formation and prediction networks.

Information on the platform ZeroCostDL4Mic is published in Nature Communications.
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More information

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