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COFER MOOLs: Massive Open Online Laboratories

Summary

Massive Open Online Laboratories is a collaborative project with the aim of sharing the expertise and infrastructures of “EPFL: Ecole Polytechnique Fédérale de Lausanne” and “HES-SO: University of Applied Sciences and Arts Western Switzerland” in digital education with online labs with several institutions from the global south: Iran, Niger, Lebanon and Djibouti. In engineering education, laboratories represent an important academic re-source as they provide practical training in addition to the fundamental theories. However, the acquisition of new machinery and the maintenance of the equipment imply a large investment that only a limited number of universities can afford. Remote laboratories allow students and educators to interact with real laboratory equipment located anywhere in the world, at any time. Consequently, the global south countries with limited funds for education resources can take best advantage of them. Remote laboratories offer excellent alternatives to southern countries as they may run through modern telecommunication technologies to enhance experimental learning and teaching objectives along with sharing remote infrastructures.

The main challenge of the project is to develop and implement innovative education activities through a collaborative widespread network deploying re-mote laboratories in electrical, mechanical and control engineering at a large scale within MOOC infrastructures. The project tackles several SDG by proposing online sharing of Swiss laboratories and infrastructures with a massive number of engineering students in southern countries, in order to offer online features to support experimental learning and teaching process, in engineering fields. The five pillars of the project are:

1. Establishing a strong north-south institutional cooperation for an enhanced joint education and research activities as well as technology transfer, within UN sustainable development goals,
2. Developing and implementing innovative and collaborative activities through an open, sustainable and widespread remote laboratories platform within digital technologies, e-learning environments and MOOC infrastructures,
3. Enhancing pedagogical and student-centered learning and teaching methodologies through remote experimental activities,
4. Reducing costs of laboratories in higher education by sharing the available infrastructures, resources and equipment of Swiss institutions for a large-scale use in engineering education.
5. Promoting the exploitation of the European infrastructures for inquiry learning with online labs developed in FP7 and H2020 under the EPFL technical co-ordination and including a repository (golabz.eu) and an authoring tool for the creation of open educational resources integrating online labs (graasp.eu).