J. Project Summary

Please provide a short summary of your project. Please recall that this section [or part of it] may be used by the European Commission, Executive Agency or National Agencies in their publications. It will also feed the Erasmus+ Project Results Platform.

Be concise and clear and mention at least the following elements: context/background of project; objectives of your project; number and profile of participants; description of activities; methodology to be used in carrying out the project; a short description of the results and impact envisaged and finally the potential longer term benefits. The summary will be publicly available in case your project is awarded.

In view of further publication on the Erasmus+ Project Results Platform, please also be aware that a comprehensive public summary of project results will be requested at report stage(s). Final payment provisions in the contract will be linked to the availability of such summary.

Although Deep Learning (DL) has a very high potential to impact many fields, currently we believe that it is not adequately and effectively taught in universities or training centers. The key concepts which are very critical to specialize in Deep Learning must be integrated in a modular curriculum. On the other hand, implementations of Deep Learning concepts proliferate in the information processing sector through the last decade. So that creating significant vacuum of work-force specialized on the topic in the labor market. Therefore, we would like to develop, test and implement a flexible and modular curriculum relevant to the needs and the requirements of the labour market such that the graduates of that curriculum will have high-quality skills and competences in Deep Learning (DL) field.

In the proposed project, a set of specialization courses will be designed to educate and train degree level students/learners on Deep Learning (DL) theory and its applications on different fields. During the project, a curriculum for DL with enriched course materials along with innovative teaching methods will be developed, implemented and tested. Although, several courses related with the DL topic currently take place in some of the engineering curricula, they do not specifically focus on Deep Learning theory and its practices. These courses typically fall short in equipping the students with the essentials of the Deep Learning (DL). However, there is an observed increasing-trend towards the utilization of DL methodologies and technologies in the information processing sector. Graduates of higher education who are to work in the information processing sector should better be equipped with DL theory and experience their knowledge and skills in the education curricula, in order to be more ready for the labor market challenges.

In this project, we will design a three-course curriculum of a specialization that will furnish students with the fundamentals of Deep Learning (DL), provide grounds to develop and to excel their skills and to acquire experience on specific implementation fields in Engineering and Life Sciences. Thus, the project aims to develop high-quality skills and competences required by the existing labor market. As by the nature of the proposed study, a curriculum will be designed to educate and train the students who are to face information processing sector challenges. Such that the graduates of the proposed specialization track will gain experiences on application of DL methods on real life problems and be more ready to labor in the DL projects and implementations.

Considering these 3 priorities, we designed the project aims and outputs accordingly. First of all, we will elaborate on the labor market requirements. Then, we will focus on setting up the curriculum outcomes which satisfy the condition of development of high-quality skills and competencies in DL fields. According to these preparations, we will develop a modular curriculum which fulfills the objectives. After then, we will generate all the course materials which will be used in a blended course environment. We will also adapt innovative teaching methods to facilitate learning and improve the competency.

To realize the project priorities, we will generate the products/outputs below:
1. A comprehensive Deep Learning Curriculum consisting of 3 courses (Course A: Fundamentals of Deep Learning (Must), Course B: Deep Learning for Life Sciences (Elective) Course C: Deep Learning for Engineering (Elective)
2. Innovative Course Materials for each course (Lecture notes, Lecture Presentations with Graphics/Animations, Simulated Algorithms & Methods
3. Training videos, Use Cases (Sample Tasks on Sample Data Sets), Student Wiki Site for sharing student's experiences, Open Course Web page on the Moodle platform for sharing all the course materials, Open Social Media on the Course Networking (CN) platform for discussing about course topics, Course Syllabuses according to the Bologna / MUDEK Standards, Extracurricular activities, Instructor guideline
4. Innovative Teaching Methodology: Online course materials will be presented to the students according to data about a learner's previous and current learning aims and potential in order to create a personalized path through program goals. Moreover, sample projects and use cases will be used to excel in DL applications.
5. Qualitative and quantitative analysis results of the effectiveness of the curriculum