



Main opportunities and challenges of artificial intelligence in engineering education

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Artificial intelligence is currently going through a disruptive moment in all spheres of society. Its application is widespread in all disciplines of knowledge. Engineering education is not alien to this phenomenon; we increasingly see students and teachers immersed in this world, facilitating the learning process for students and teachers and offering them tools that help them improve their teaching processes. Within these opportunities offered by AI, we can find greater personalization of learning for students, which means that the content is adapted and adjusted to the profile of each individual because each person learns in a different way and at a different pace. This makes learning more enriching for the students. In the case of teachers, it allows them to automate repetitive tasks and frees them from workload. It also allows them to deploy multiple scenarios to develop learning activities for their students. However, there are significant challenges, such as the widening of the digital gap between higher education institutions that have advanced technologies for the implementation and development of AI. In this sense, institutions that have the resources to start up will be seen in a better position than those that do not. Likewise, the resistance of many teachers to this paradigm shift would slow down the progress processes in the implementation of AI in the curriculum, putting students at a disadvantage compared with those who adopt it quickly. On the other hand, ethics and privacy are very important factors because, due to bad practices, many students end up using this technology to solve their activities; consequently, knowledge appropriation would not be generated. However, these solutions may be biased by the same algorithms intrinsic to AI, which prevents critical thinking in the same students.

Finally, in the face of the opportunities and challenges offered by Artificial Intelligence, we must take everything that generates improvements for the development of learning in engineering students and carefully monitor all those that affect the proper use of this technological tool in teaching. It is important to highlight those teachers must quickly open up to this new trend and that higher education institutions provide technological infrastructure that allows the implementation of AI in education in order to be competitive.