Presentation of the paper "Computational thinking beyond STEM: an introduction to "moral machines" and programming decision making in Ethics classroom"

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Abstract

This is the presentation of the paper entitled "Computational thinking beyond STEM: an introduction to "moral machines" and programming decision making in Ethics classroom" in the TEEM 2016 International Conference held in Salamanca (Spain) in November 2-4, 2016.

This work describes a learning activity on computational thinking in Ethics classroom with compulsory secondary school students (14-16 years). It is based on the assumption that computational thinking (or better "logical thinking") is applicable not only to STEM subjects but to any other field in education, and it is particularly suited to decision making in moral dilemmas. This will be carried out through the study of so called "moral machines", using a game-based learning approach on self-driving vehicles and the need to program such cars to perform certain behaviors under extreme situations. Students will be asked to logically base their reasoning on different ethical approaches and try to develop a schema of decision making that could serve to program a machine to respond to those situations. Students will have to deal also with the uncertainty of reaching solutions that will be debatable and not universally accepted as part of de difficulty, more ethical than technical, to provide machines with the ability to take decisions where there is no such thing as a "right" versus "wrong" answer, and potentially both (ore more) of the possible actions will bring unwanted consequences.

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Link to the presentation

http://es.slideshare.net/grialusal/presentation-of-the-paper-computational-thinking-beyond-stem-an-introduction-to-moral-machines-and-programming-decision-making-in-ethics-classroom

Keywords

Computational thinking; Ethics; moral machines; self-driving car; game-based learning; decision making; Logic; TACCLE 3 - Coding.

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