

## Non Immersive Virtual Laboratory Applied to Robotics Arms

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**Abstract :** This article presents a non-immersive virtual laboratory to emulate the behavior of the Mitsubishi Melfa RV 2SDB robotic arm, allowing students and users to acquire skills and experience related to real robots, augmenting the access and learning of robotics in Universidad de las Fuerzas Armadas (ESPE). It was developed using the mathematical model of the robotic arm, thus defining the parameters for virtual recreation. The environment, interaction, and behavior of the robotic arm were developed in a graphic engine (Unity3D) to emulate learning tasks such as in a robotics laboratory. In the virtual system, four inputs were developed for the movement of the robot arm; further, to program the robot, a user interface was created where the user selects the trajectory such as point to point, line, arc, or circle. Finally, the hypothesis of the industrial robotic learning process is validated through the level of knowledge acquired after using the system.

**Keywords :** virtual learning, robot arm, non-immersive reality, mathematical model

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