SERIOUS GAMES FOR TRAINING IN LAPAROSCOPIC SURGERY
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The KTS project is proposing to design and validate a serious game dedicated to medical students and surgeons with the purpose of training basic key psychomotor skills in minimally invasive surgery. The main physical skills to be developed are coordination, dexterity, manipulation and speed. The development of those skills is measured in terms of speed, distance, precision, procedures or techniques in execution. The project proposes a game with various levels of difficulty and with different types of non-surgical tasks that can be mastered throughout the game. Based on 4 workshops organized in 4 countries, on the users’ needs and requirements, the game is offering the user new levels to be unlocked as one skill is mastered, achievements, and a user-friendly graphical design, as well as advices from experts.

For game interaction, the user is using real laparoscopic instruments and needle holders. A camera is mounted in a training box and computer vision techniques are used in order to track the laparoscopic instruments, which are virtually simulated in the computer. Based on the image provided by the camera, the system calculates the 3D position and orientation of the surgical tools.

Taking into account the vast applicability of serious games and their involvement in improving dexterousness in different professions, we are expecting the KTS project to lead to a novel and engaging model for teaching student and residents and appealing to stakeholders within the MIS surgical education community.