First-Person Simulation and Training of Bio-Security

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Motivation

The most effective way to train people in safety-critical tasks is let them experience the consequences of their actions, but this is often unpractical. For example, in the training of medicine students for preventing and solving accidents in High security biological laboratories, is too dangerous to put a student in a biological laboratory and create an accident. Here, virtual simulation is an important device for training such bio-hazards.

Objective

We are developing an application capable of teaching medical students how to solve and avoid the different accidents in a high security biological laboratory. The purpose of this research is to prove than virtual training can be enhanced by using an **interactive storytelling system**, creating environmental effects and events that **maximize** engagement and training skills.

Partners:

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Core technology: Task recognition and execution
A novel storytelling technique focused in maximize the learning quality

Novelty

Task recognition with continuous user intervention, updating the task in real time

Task Recognition Module:
The goal of this module is:
- to decide if some received event **[3]** fits in a certain task and accordingly generate a set of possible task candidates.
- select which task from the candidates should be executed. The decisions on the selected task will be sent to the Step Execution Module **[4]**.

Step Execution Module:
This module receives the selected task from the Task Recognition Module **[4]** and will give the order **[5]** regarding the generation of the next event for that task to the Event Propagation Component **[6]**.

Event Propagation Component:
This component is in charge of dealing with the direct consequences of the events in the scenario.
- Sends relevant events to the Task Construction Module **[3]**
- Receives instructions from it, e.g., to generate more events **[6]**.
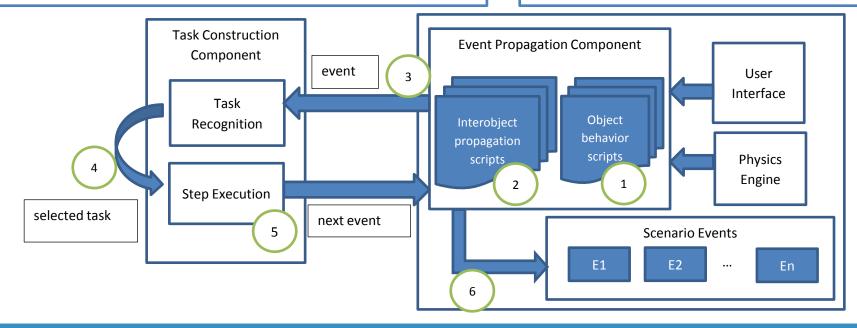
It contains two groups of scripts:

[1] Object Behavior Scripts:
This group is in charge of specifying the behavior of objects that are relevant in a given scenario. For each object, a behavior script is defined. A script contains a set of cause-effect pairs (or rules). If a rule is triggered, a scenario event will be generated.

[2] Inter-object Propagation Scripts:
This group contains scripts with cause-effect rules regarding objects interacting with each other.