

VISUALIZATION OF ALGORITHMS USING REMOTE LABORATORIES

Remote laboratories are known, for example, The Grid of Online Laboratory Devices Ilmenau (GOLDi) (Germany), visualise control algorithms using a WEB camera aimed at the physical model of the control object, as well as using visual model animation. If at the input of the animation model we generate a stream of events specific to the object of study (user calls for the elevator, incoming loads for the warehouse), then the complexity of the algorithms of the simulated system increases due to the processing of these flows. Therefore, visualization of their implementation is useful.

In this paper, we propose an animation model for the Warehouse physical model of the GOLDi laboratory, synchronized with the physical model. The model was written using SVG and JavaScript, supplemented by a generator of stochastic cargo arrangement in Warehouse. The model is animated on the basis of Warehouse operations (take / move / put cargo). The software implements an algorithm for sorting cargo into the Warehouse according to the principle of playing “15” with random initial placement and preliminary assessment of the achievement of sorting goals. A greedy graph search algorithm was used to solve the problem. Screens animations of the initial and final placement of cargo in the Warehouse are shown in the figure, and the sorting process video is available at <https://www.youtube.com/watch?v=yKwltVF6fMI>

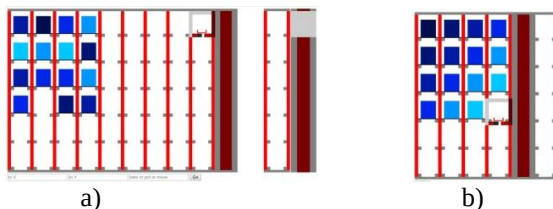


Figure 1 – Screens of the initial (a) and final (b) placement of cargo in the Warehouse

The operation of the algorithm was tested by the GOLDi laboratory at the Technical University of Ilmenau.