SUMMARY

This work covers the possibility of implementation Virtual Reality in industrial field. VR can serve like a barrier for finding the best solutions in technologies, as there is opportunity to test production lines, robot's movement, safety of the workspace without any cost loss or machines destructions/damaging, which can be very favourably for companies.

This project consists of TUT IVAR Laboratory built-in Virtual Reality with Digital Twin Concept included. All items in laboratory implemented to real sizes and some of them are interactable. Also, application gives ability to control robot and create programs, which can be saved and used in further objectives. In addition, this project gives clear understanding how safety of industrial robot can be checked in VR. Lately, project will be converted to multiplayer, which allows to provide presentations, workshops or lectures in this laboratory. Also, it can be used by university in marketing or exchanging experience purposes as well.

The most valuable advantage of this application is that can be modified by adding objects, robots and scenes. It is easily to insert another robot with control interface and adjust it to user's preferences.

Also, project was tested by 10 people including professors and they gave a very nice feedback about laboratories similarity.

Thesis was done during the first half of 2018 year in TUT IVAR Laboratory using its equipment such as computers, HTC Vive headset, YASKAWA MOTOMAN GP8 industrial robot and software such as Autodesk Maya and 3ds Max, Unity, Microsoft Visual Studio.