Abstract

The purpose of the thesis was to create an application that uses the augmented reality to create a virtual fitting room. The program provides a great variety of clothes and accessories available in numerous patterns and colours. Additionally they are divided into categories: for women and men. The program enables the user to try on clothes and accessories by applying a 3D model with a chosen item onto the image obtained from the Kinect sensor camera.

The model automatically fits the user's posture, however it is also a possible to resize or change the position of the model manually according to the needs of the person. Clothing items adjust to the silhouette even during movement and rotations changing their position and size. There is also the possibility of taking a photo which is saved on user's computer.

The application uses Kinect sensor. Not only does the device provide the application with an image from the camera, but it also enables the interaction with the user thanks to built-in skeleton tracking mechanisms. The user controls the program with gestures, which makes the application intuitive and easy to handle. During the implementation of the program the depth stream wasn't used directly. The stream is obtained by interpretation of the infrared waves sent from the emitter. Processed stream data can be used during the further development of the application and contribute in more precise adjustment of the 3D models to user's posture.

The following thesis presents theoretical aspects, technologies and algorithms used during the implementation of *3D Virtual Fitting Room*. The mechanisms of communication with the sensor as well as the most important parts of the code, responsible for essential parts of the application, such as rotation, translation and scaling the 3D model were briefly described. The construction of the application and the methods responsible for gesture recognitions, which were used for button handling and overall menu control, were also introduced.

The thesis contains information about implemented concepts, design patterns and outsourced libraries that have been used. Additionally commercial solutions were described, as well as phases of implementation and problems faced during the implementation.