CS – 6301: Mixed and Augmented Reality

InkART (Ink Augmented Reality Tattoo) Report

- ***Nidhi Vaishnav (ntv170030)***

Introduction:

Expectation from computer to process in augmented manner is quite old and fiction at a time. To perform these tasks computer must have the knowledge of the real world as well as ability to comprehend augmented data.

We are aware that getting a tattoo or drawing a graffiti is a quite tedious as well as the time-consuming task, and it is very difficult to remove either of them. So, here we are creating an augmented reality android application InkART (Ink Augmented reality Tattoo) to display augmented tattoos (application usage can be extended to graffities and stickers) as well as draw the tattoo in augmented manner in the android device so that we can have a preview of how the outcome will look like.

Functional Requirements:

1. Product Perspective:

Here, we are using Unity with Vuforia Augmented reality SDK. We have implemented following functionalities.

2. Hardware requirements:

Any android device with android API 4.4 ‘Kitket’ (API level 19) is supported.

3. Software requirements:

Any android device with above hardware support of unity and Vuforia is required.

4. User Interface:

System is devided into two parts:

1. User can select any tattoo based on the target image
    a. Provided correct target image, user can select a tattoo from the scroll bar
    b. This tattoo will be displayed on the target image
    c. User can move, rotate and scale the tattoo
2. User can draw any image based on the target image
    a. Provided correct target image, user can draw a tattoo on the device screen
    b. User can clear the tattoo using the clear button

5. Functionalities implemented:

1. canvas for user interaction
2. Scroll bar for tattoo with tattoos as buttons
3. Image target with Augmented tattoo
4. Image target with virtual marker
5. On touch/ click this marker will draw the object in the virtual device
6. A button to clear these drawing

Conclusion:

Understanding:

- During project I explored Vuforia and learnt multiple functionalities
- I learnt about canvas functionalities like scrollbar and anchors
- Moreover, It helped me to understand about the difference between basic camera and Vuforia camera
- It helped me to learn about launching an application using Unity

Challenges:

- Collaborating Vuforia camera and Unity Camera was difficult as camera switch was happening due to addition of canvas

Limitations:

- We intended to make the target image some symbol, and put it on the hand, but it had very low number of feature points. Which did not allow to detect or train the image.
- A different approach based on the computer vision library OpenCV was tried, but for that camera switch between ARCamera of Vuforia and 3D camera was necessary, as OpenCV did not work with ARCamera and switching camera simultaneously is still an ongoing research.

Future work:

- Add world co-ordinates to the drawn points which can make the look 3D