AR-BASED MUSEUM APP

By- KRITIKA GUPTA & SPARSH AHUJA
Guided by- PROF. ANUPAM AGARWAL

AUGMENTED REALITY

AR IS THE ADDITION (AUGMENTATION) OF VIRTUAL DIGITAL OBJECTS TO THE REAL ENVIRONMENT AROUND US. THESE AUGMENTED VIRTUAL OBJECTS CAN BE PLANE 2D AND 3D IN THE FORM OF TEXT, AUDIO OR IMAGES. MAINLY DIVIDED INTO TWO TYPES:-

1. MARKER BASED AR

- Uses embedded visual markers in the system to superimpose virtual elements.
- The markers to be recognized are provided beforehand.
- Virtual object remain stick to the physical marker.

2. MARKER-LESS AR

- AR application that does not require any pre-knowledge of a user's environment to overlay 3D content into a scene.

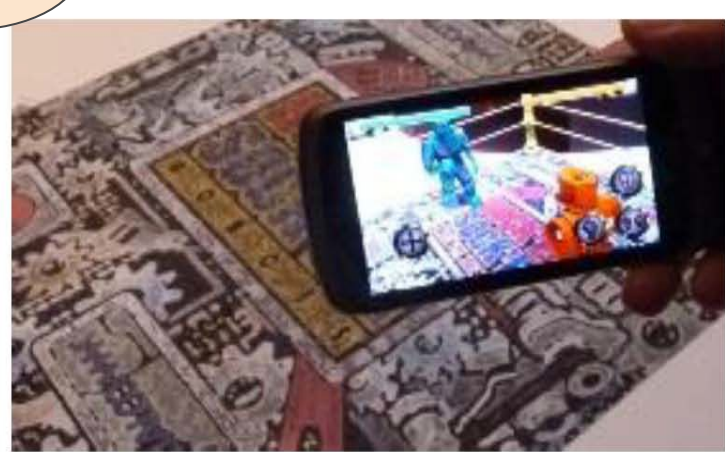- Allows to move the virtual object.
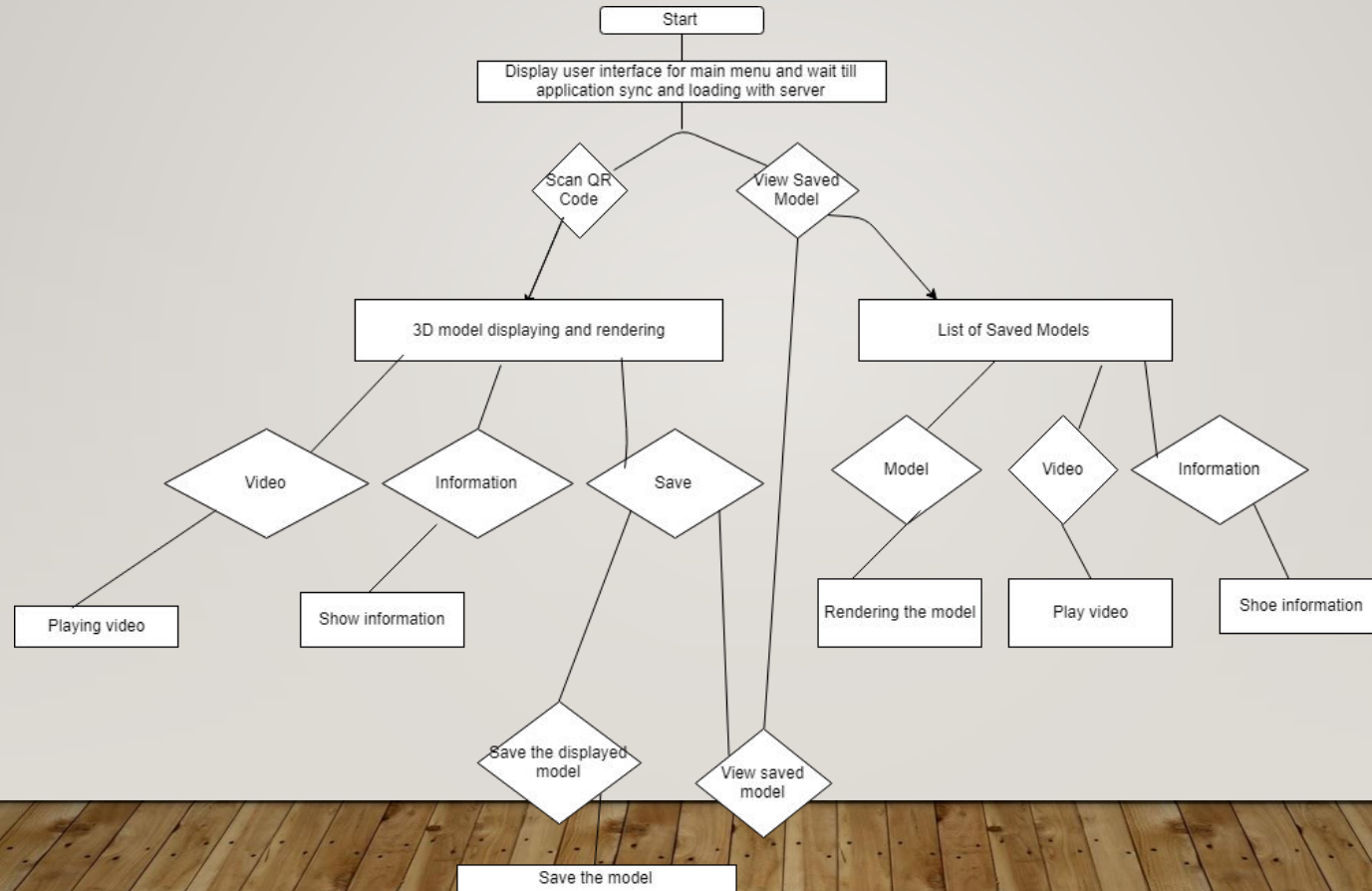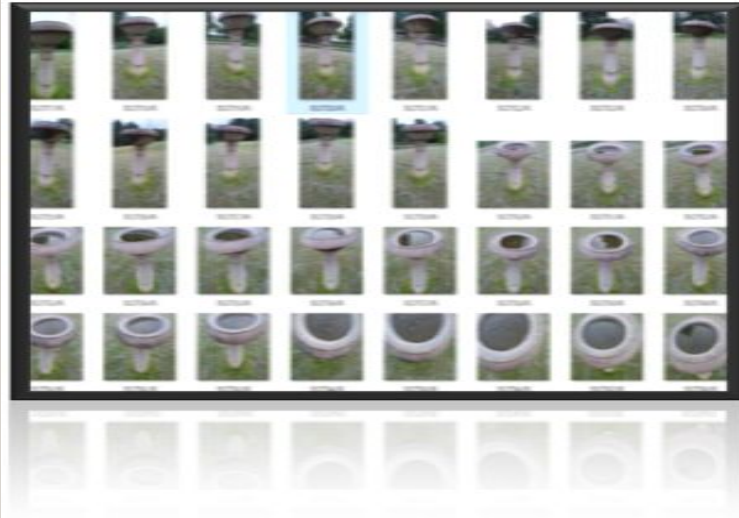
Advertising and marketing

Uses of AR [2]
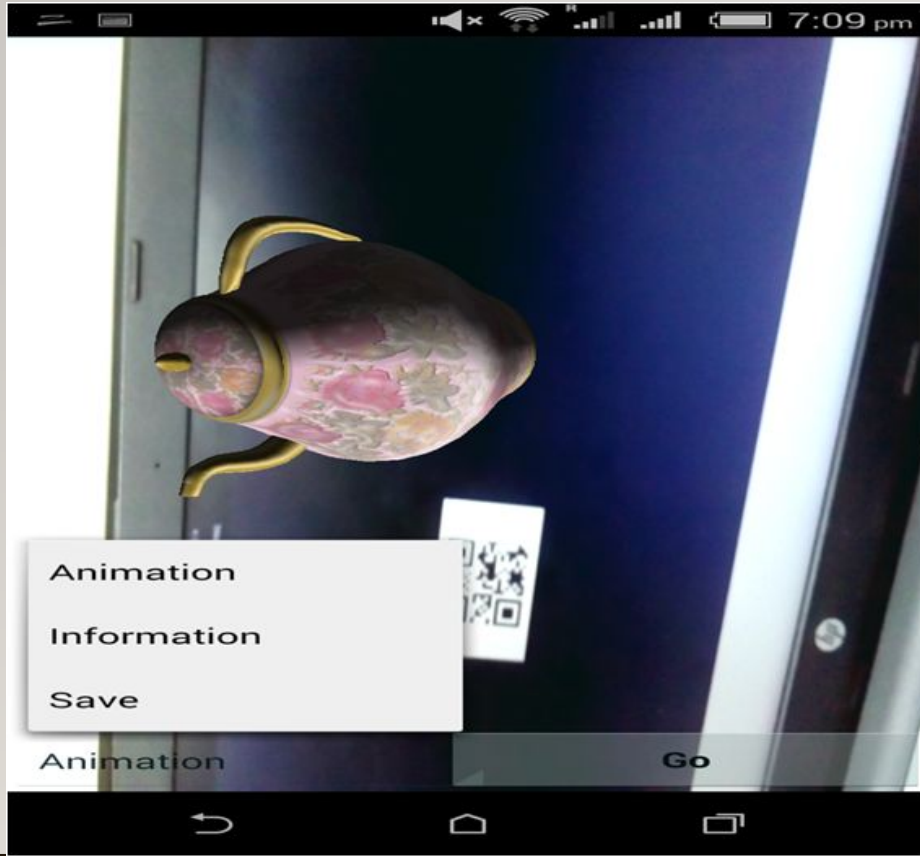
Medical

Education

Entertainment

ABOUT THE APPLICATION

3D MODEL CREATION

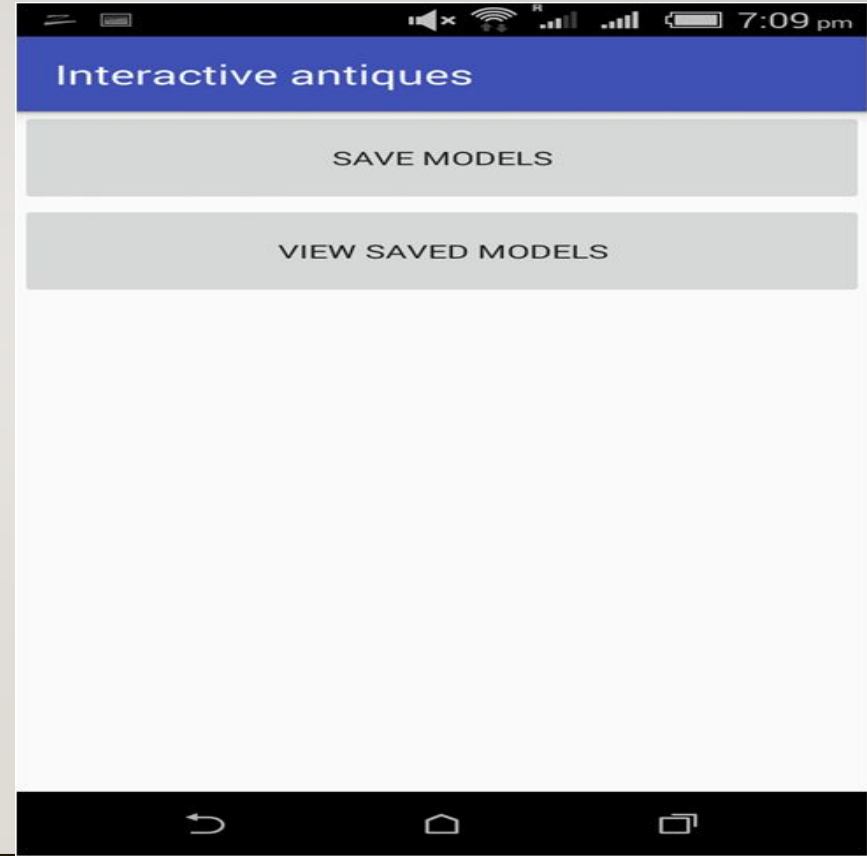# SAVE OFFLINE

SAVED MODELS

Tools Used

1. HARDWARE: SMART PHONES AND COMPUTER SYSTEM (6GB RAM)
2. SOFTWARE:
   a. REGARD3D AND BLENDER (3D MODEL CREATION AND SIZE REDUCTION)
   b. MIN3D LIBRARY (LOADING 3D MODELS)
   c. ANDROID STUDIO 3.2 (CREATING APPLICATION)

OBJECTIVE

1. Change the texture of the existing 3D Model in the application.
2. To reduce the size of the 3D Model.
3. Add the option to view the information about the internal memory used by a model.
4. Show the percentage of internal memory available for usage.
5. Add delete option for the saved models in application to free up the internal memory.
6. Pop up on pressing delete for user confirmation.
7. To improve GUI.

# POSSIBLE EXTENSIONS OF CURRENT EXISTING WORK

1. An avatar guide for storytelling and explanation for an object when user is near the object.
2. Interactive test game of sorting artifacts.
3. Interactive coloring game.
4. Quiz game to test understanding

ACTIVITY CHART

S.No.	Dates	Workflow
1.	15 May to 21 May 2019	Reading the research papers related to the problem statement and decide the proposed work according to the existing work
2.	22 May to 28 May 2019	Setting up environment and learning to use the tools involved in the pre developed app.
3.	29 May to 4 June 2019	Import the code of the pre developed app in the system and run it, and look up for the next step to integrate the game
4.	5 June to 14 June 2019	Learn to change the texture of an existing 3D model and reduce the size of model formed by photometry.
5.	15 June to 24 June 2019	Add the delete option in the existing application to free up the phone's internal memory.

6.	16 June to 30 June 2019	Improve App's GUI to make it more explanatory.
7.	1 July to 7 July 2019	Prepare final report for the work completed during the summer internship.

DATA SETS   and   RESULTS
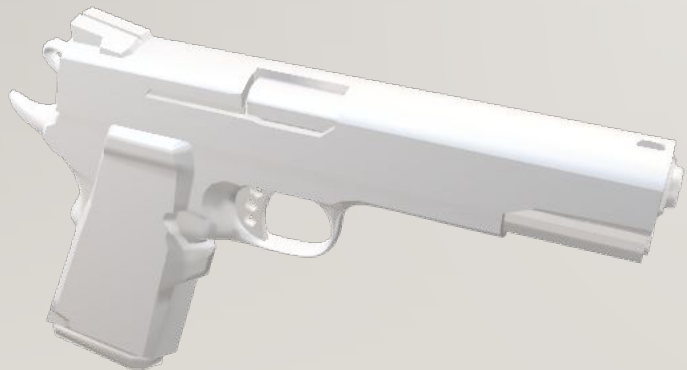
LANGUAGE , TOOLS AND LIBRARIES TO BE USED
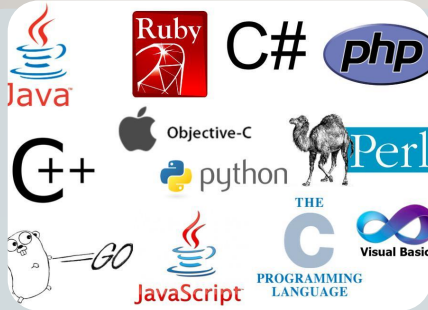
Python
Java
Xml

1. AWS
2. Blender
3. Vuforia
4. Android Studio

1. Open-cv
2. Cycles_
Matlib

WORK COMPLETED SO FAR

1. Changed texture of existing models.

   2.   Created a sample basic 3d model with regard 3d .

DETAILS OF TASK UNDER PROGRESS

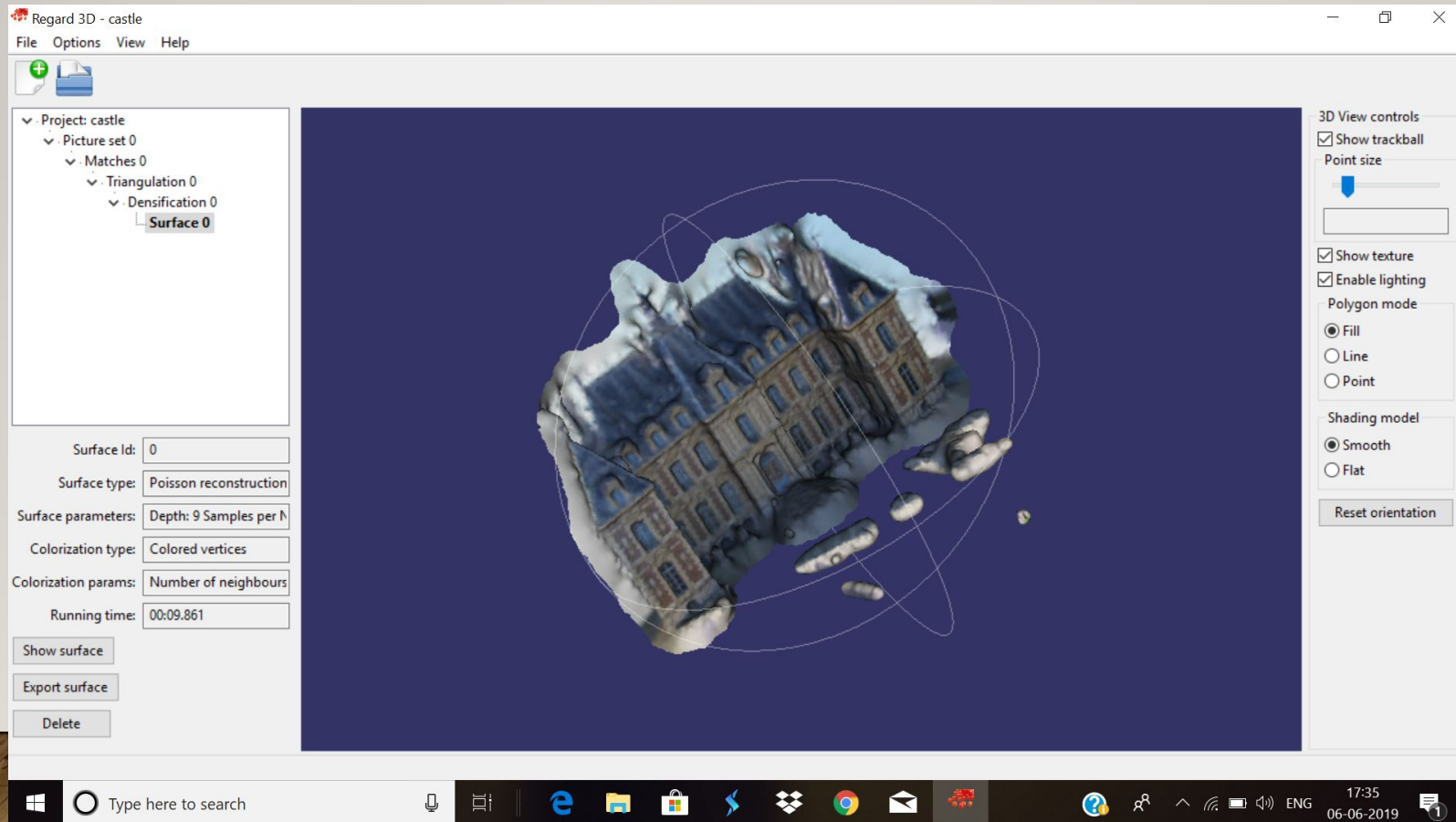1.   To select multi models at once:-

    Using listview adapters of Android to activate MultiChoice Model Listener.

2.   Adding DELETE button to the museum app.

    Studying libraries of android to check for user's left over space and wipe models even from ram after deleting.
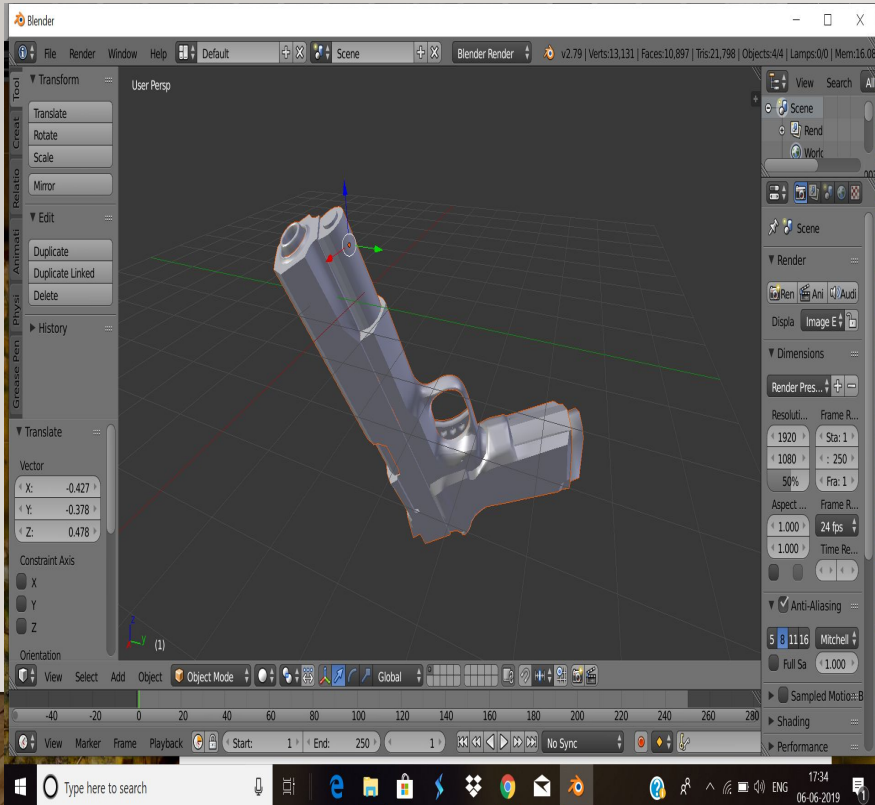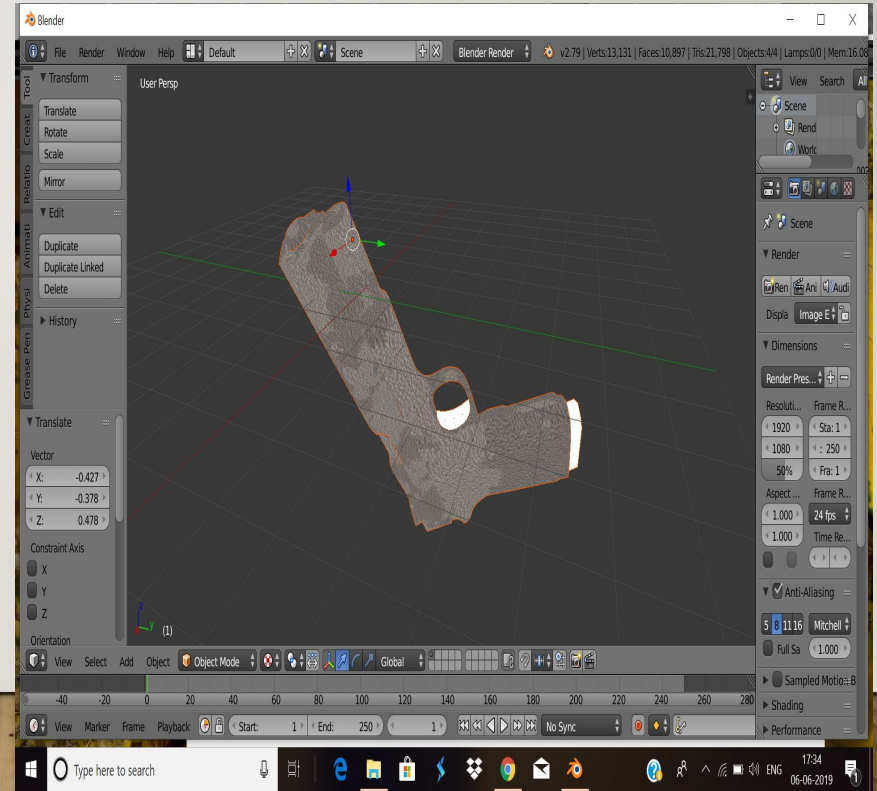
Made a church 3D model in Regard 3D

Changed texture of the gun model

OLD

NEW

REFERENCES

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2. "Loubna Ahmed, Salma Hamdy, Doaa Hegazy and Taha El-Arif"-Interaction Techniques in Mobile Augmented Reality: State-of-the-art - iEEE Seventh international Conference on intelligent Computing and information Systems 2015

3. "Nehla Ghouaiel, Samir Garbaya, Jean-Marc Cieutat and Jean-Pierre Jessel"- Mobile Augmented Reality in Museums : Towards Enhancing Visitor's Learning Experience - The International Journal of Virtual Reality, 2016, 17(01): pp21-pp31

4. "Kathrin Koebel, Prof. Dr. Doris Agotai, Prof. Dr. Stefan Arisona and Dr. Matthias Oberli" - Biennale 4D- A Journey in time - 2017 IEEE\

5. "Mattia Ryffel, Fabio Zünd, Yağız Aksoy, Alessia Marra, Maurizio Nitti, Tunç Ozan Aydın and Bob Sumner" - AR Museum: A Mobile Augmented Reality Application for interactive painting recoloring - 2017

6. "YAGˇIZ AKSOY, TUNC OZAN AYDIN and ALJOˇ SA SMOLI´C and MARC POLLEFEYS " -
Unmixing-Based Soft Color Segmentation for Image Manipulation -2017

Other References

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2.https://www.infoq.com/articles/augmented-reality-best-skds/

3.https://www.newgenapps.com/blog/augmented-reality-apps-ar-examples-success

4.https://developer.android.com/reference/android/os/StatFs

5. Reference DataSet for images to formulate church 3d model
https://excellmedia.dl.sourceforge.net/project/regard3d/Demo/OpenMVG/SceauxCastle.zip