Unity and Vuforia

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- Fundamentals of image target
- How to capture an image which can be used as image target
- Next we will create a vuforia license key and upload your image inside vuforia database and find out its star rating
- Activate the webcam and project a humanoid 3D model on top of the image target
- Finally build this complete project and test its output on your android smartphone

Importing Vuforia Package inside Unity

- Create a unity project
- Create a Vuforia Development account
  - https://developer.vuforia.com/
- Import Vuforia SDK inside Unity project

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Good Education, Good Jobs

IF THERE IS PROBLEM IN INSTALLING VUFORIA PACKAGE FROM THE PREVIOUS WAY

Download Vuforia core sample from asset store and install vuforia package from core samples

Web camera output

- Delete the normal main camera and add AR camera
- AR camera will activate the webcam of laptop when you will check output in play mode
- Activate back camera of when testing output on smart phone
- After adding AR camera next if I play button then you can see the output from external webcam

Creating project license key

- Open Vuforia
- Inside Vuforia engine portal click on the Develop tab
- Then click on License Manager tab
- For creating a new license key click on Get Development Key
- Give license key name
- Click terms and conditions checkbox

- Copy the license key (a long string of text)
- Paste it inside Unity
  - Open Unity project
  - AR camera → Open Vuforia engine configuration
  - Paste license key

After pasting the license key get automatically linked to the AR camera the minute we paste

Capturing Image

- Image target is a normal image which we place in front of the webcam or Smartphone camera
- Once the image is recognized we will project a 3D model on top of it
- Image target are also referred to as Marker's in AR
- We will capture an image and then crop out its unnecessary parts

Capturing image

- Camera Scanning App instead of inbuilt camera app
  - **Microsoft Office Lens (free)**

Creating Vuforia database

- **Goto Vuforia account**
- **Develop tab→Target Manager Tab**
- **Add Database**
- **Give a name to the database and select type as Device**
- Device Target means Image target will be saved inside Smartphone's device
- Cloud option means that the image target will be stored inside vuforia cloud and for accessing we need Internet connection

- Vumark is an advanced image target technology developed by vuforia
- These are similar to QR codes or barcodes
- We can develop multiple image targets which look similar but all the images have different feature points that distinguish them from each other

- Create a database
- Add Target
- Single image
- Browse button
- Open
- Jpeg
- 2mb
- Width I meters (scale accordingly)

- Yellow points are representation of how well the image will be recognized by the Smartphone camera or webcam
- Image Processing recognizing unique points

- Download the database
- select unity option
- Import the database package inside unity project

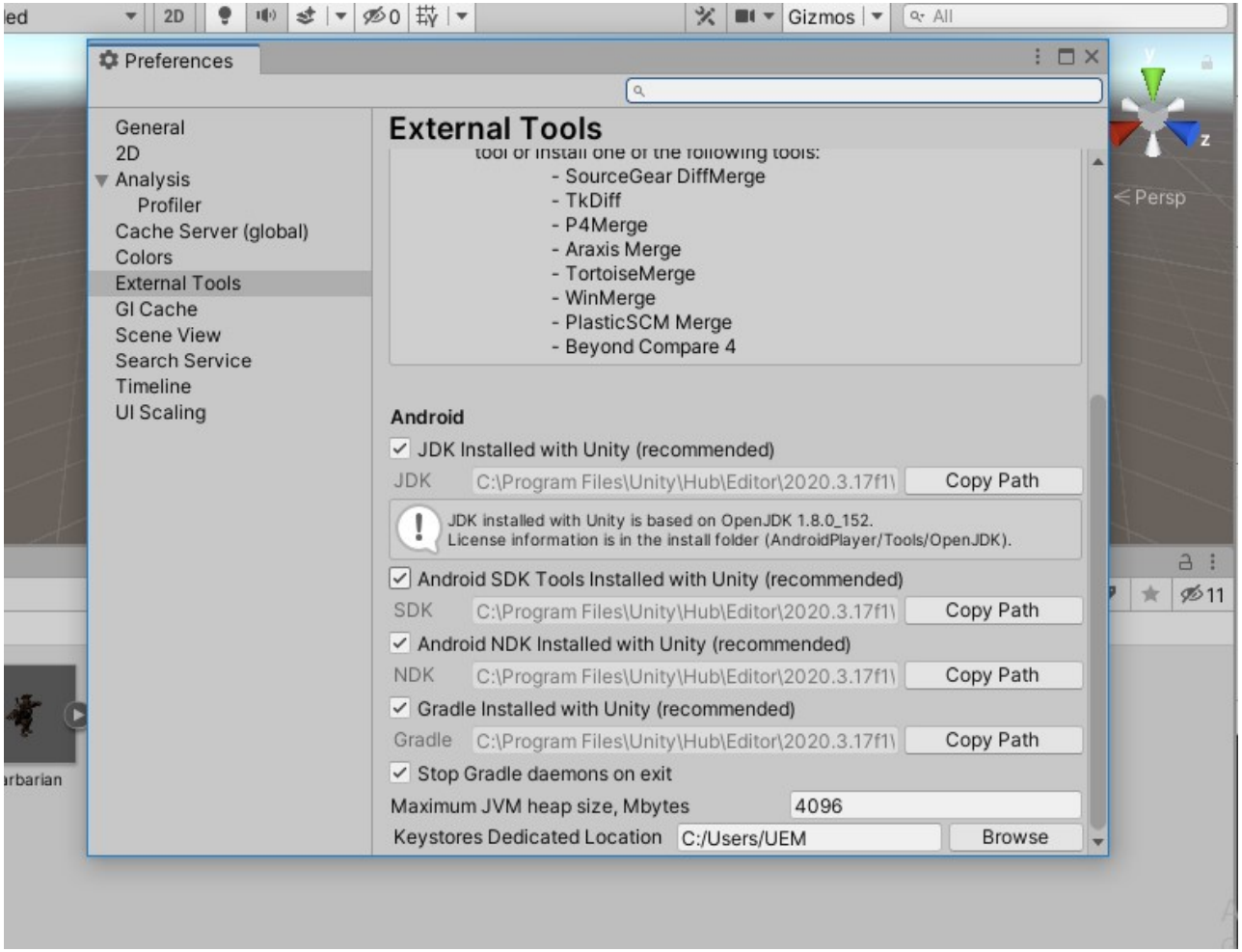
Projecting a 3D model on the target image

- Plus sign dropdown to add image target
- In the vuforia engine change from image to from database
- Select the database from the database dropdown
- Since this database contains only one image select the image from the dropdown

- In the advanced option you can see the width of the image and height
- To test the augmented reality output, we place a cube on top of the target image

Testing o/p on Android smartphone

- Build and Run AR app
- Cross check whether JDK and SDK is installed in Unity
- Go to edit → preferences
- Go to External Tools scroll down to android option


Preferences
General
2D
Analysis
Profiler
Cache Server (global)
Colors
External Tools
GI Cache
Scene View
Search Service
Timeline
UI Scaling
External Tools
- SourceGear DiffMerge
- TkDiff
- P4Merge
- Araxis Merge
- TortoiseMerge
- WinMerge
- PlasticSCM Merge
- Beyond Compare 4
Android
JDK Installed with Unity (recommended)
JDK C:\Program Files\Unity\Hub\Editor\2020.3.17f1\ Copy Path
JDK installed with Unity is based on OpenJDK 1.8.0_152.
License information is in the install folder (AndroidPlayer/Tools/OpenJDK).
Android SDK Tools Installed with Unity (recommended)
SDK C:\Program Files\Unity\Hub\Editor\2020.3.17f1\ Copy Path
Android NDK Installed with Unity (recommended)
NDK C:\Program Files\Unity\Hub\Editor\2020.3.17f1\ Copy Path
Gradle Installed with Unity (recommended)
Gradle C:\Program Files\Unity\Hub\Editor\2020.3.17f1\ Copy Path
Stop Gradle daemons on exit
Maximum JVM heap size, Mbytes 4096
Keystores Dedicated Location C:/Users/UEM Browse
Persp

- If you have not downloaded during installation
- For installing check version, go to Unity Hub
- Open installs
- Three dots on that particular version
- Add modules
  - Grey checkbox means installed
  - Blue not installed

- Restart Unity
- Building app
- File build settings
- Android platform
- Switch platform
- Add sample scene

- Player settings
- Change company name
- Give your name
- Product name → app name
- Change default icon to set a logo for your app
- Drag image inside Unity
- Data file → logo → logoimg
- Default to 2D sprite

- Drag logo to set ICON
- Inside Resolution
  - Landscape left
- Other settings
  - Remove vulcan graphics (avoid black screen)

- Package name
- Select minimum API level lolypop
- Maximum API level
  - Renamed as company name and product name
  - com.companyname.productname
  - Free to change

- Build settings
- Build
- ARLONE.apk
- Save
- After the apk file is created we will transfer it to android Smartphone
- Connect Android Smartphone via USB

- Transfer the app to your smartphone
- Install it
- Run the app in your Smartphone to test it