

Augmented Reality enhancement of existing Website for Images

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Abstract

Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory [2]. We want enlist the tasks and procedures with tools required to develop a Normal website into an Augmented Reality image based website.

Keywords: Auditory, Haptic, Somatosensory, Olfactory and Visual.

1. Introduction

Here Real World's Object is considered and is enhanced by computer-generated perceptual information [9]. Augmented reality (AR) involves overlaying visual, auditory, or other sensory information onto the world in order to enhance one's experience [7].

2. Need for AR Enhancement

- Augmented reality has the potential to be better than reality, as it allows users to preview items faster and more easily than in real life [6].
- Augmented Reality creates unique digital experiences that blend the best of digital and physical worlds [8].
- It eliminates cognitive overload, i.e. a situation where one is given too much information at once, or too many simultaneous tasks, resulting in not being able to perform or process the information as it would otherwise happen if the amount was instead sustainable [4].
- Heightens user engagement, i.e. greater anticipated satisfaction of User using AR Enhancement.
- Competitive differentiation, i.e. With AR, users are able to interact with virtual contents in the real world, and are able to distinguish between the two worlds within the same [5].

3. Algorithm of AR enhancement of existing Website for Images

Step-1: Scan the required website and List all the Images used in the website.

Step-2: Store these Images in the directory and name the Directory-1.

Step-3: Convert All these 2-Dimensional Images in Directory-1 into 3-Dimensional Models.

Step-4: Store 3-Dimensional Models in a Directory-2.

Step-5: Convert these 3-Dimensional Models in a Directory-2 into USDZ and store in Directory-3.

Step-6: Replace all the Images embedded in the website with respective USDZ stored in Directory-3.

Step-7: Re-host and re-launch the updated website with images replaced by respective USDZ files from Directory-3.

4. AR enhancement Flow chart

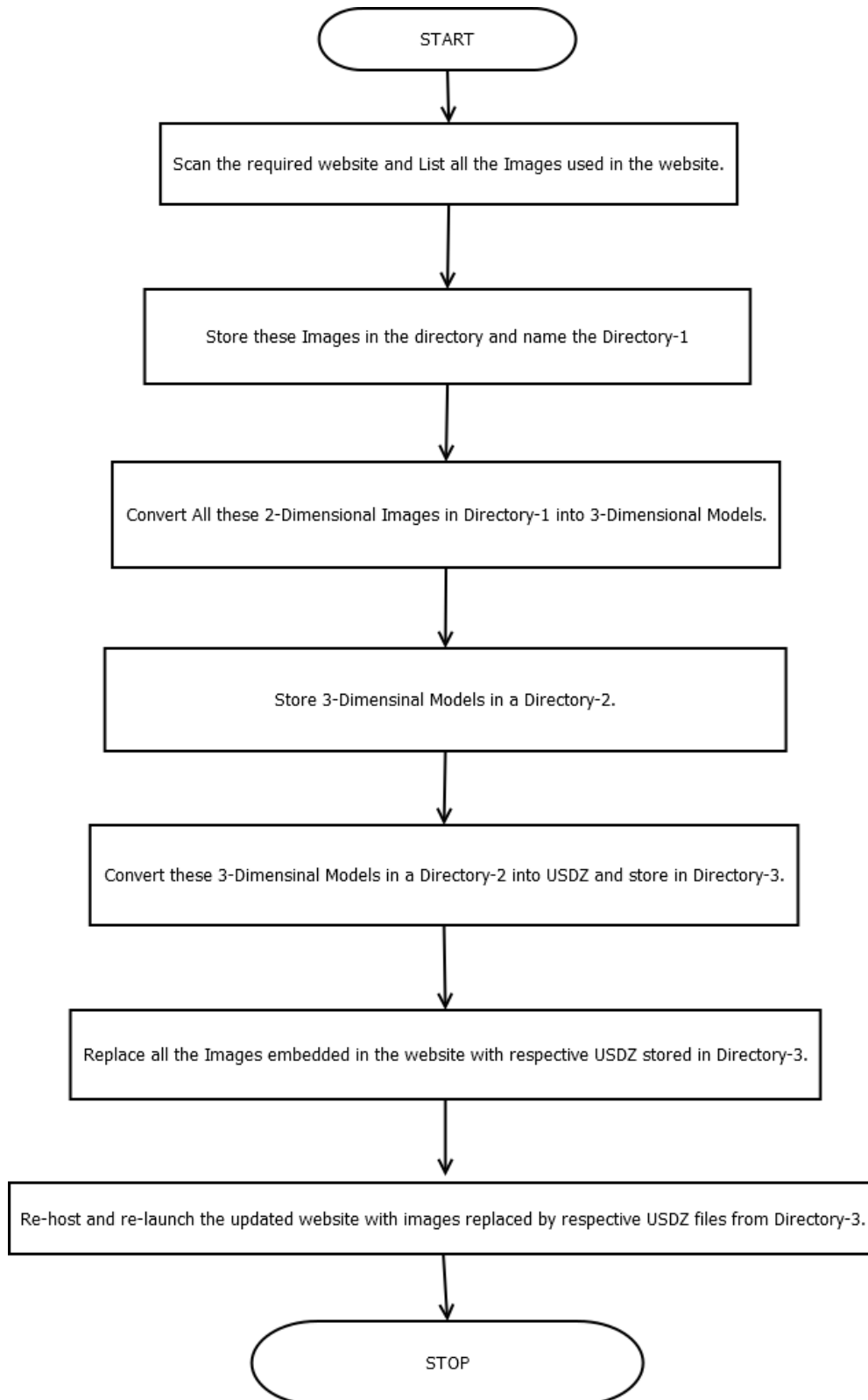


Figure1 Flow chart of Algorithm of AR enhancement

5. Methodology

- With the Python code we will scan the website and collect all the Images from it and store them in folder Directory-1.

- With Python Code we will convert all the 2D-Images to 3D models and Store them in Directory-2.
- With Python code and open source tools we will convert all the 3D-Models of Images into USDZ files and store them in Directory-3.
- With Python code we will find out the location of all images stored in cloud and replace it with our Directory-3.
- With Python code we will replace the existing images with USDZ files from Directory-3 and host the website.

6. .1 Explanation of Procedures in Methodology

Carry out the web scraping Procedure for required URL as below Procedure mentioned.

Step-1: Identify the target website [1].

Step-2: Collect URLs of the pages where you want to extract data from [1].

Step-3: Make a request to these URLs to get the HTML of the page [1].

Step-4: Use locators to find the data in the HTML [1].

Step-5: Save the data in a JSON or CSV file or some other structured format [1].

Step-6: Select all the images from the HTML file and store them in Directory-1 with naming convention.

6.2 Web scraping Flow chart

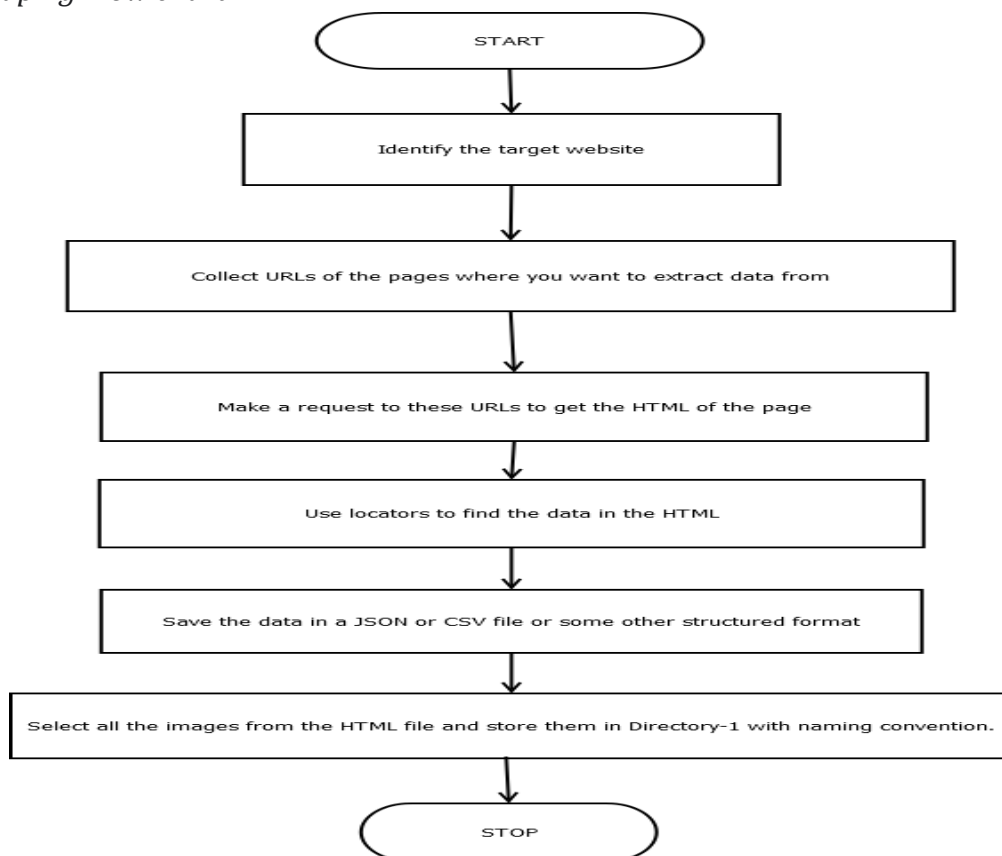


Figure2 Flow chart of Web scraping

6.3 2D Image to 3D Model Conversion

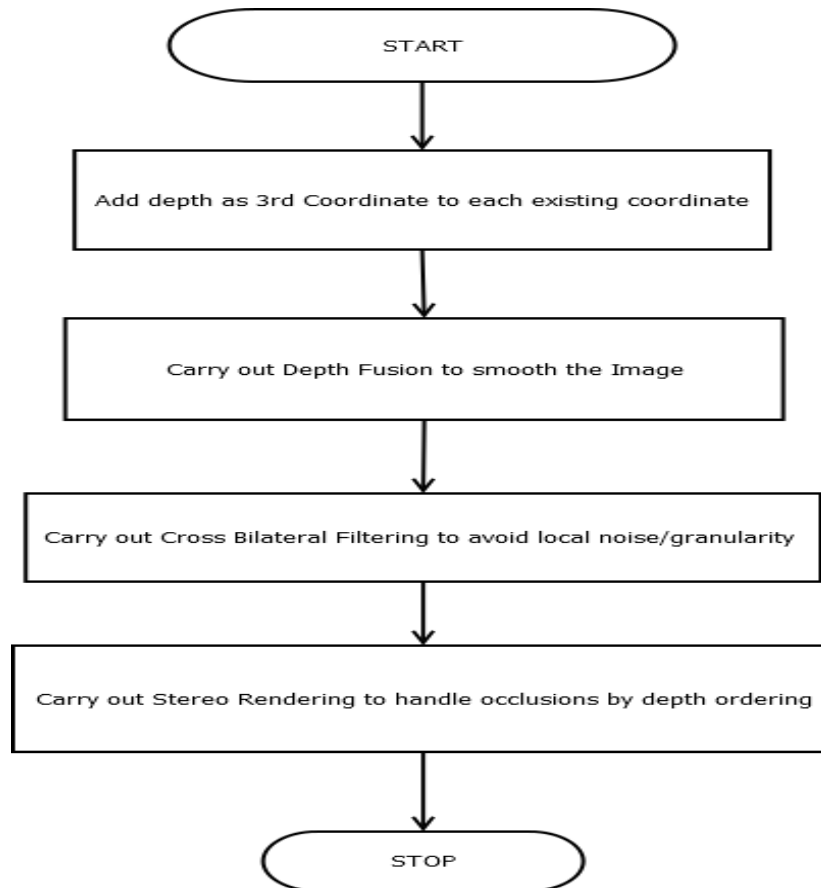


Figure3 Flow chart of 2D Image to 3D Model Conversion

7. Procedure Explanation in steps

Step-1:

Here for each point in 2-Coordinate system of 2D Image, we will add the 3rd point to coordinate system as depth. The depth is estimated from a huge database which contains image and depth pairs

Step-2:

We will carry out Depth Fusion for all point in 3-Coordinate system as, it smooth the image.

Step-3:

We will carry out Cross Bilateral Filtering to avoid local noise/granularity in the fused depth d.

Step-4:

We will carry out Stereo Rendering to handle occlusions by depth ordering.

Step-5: Stop the Procedure.

Convert the 3D-Model of Images in Directory-2 into USDZ files and store in Directory-3.

Step-6: USDZ file is like a PNG for 3D, with optimizations for storage and sharing. USDZ is also part of WebAR viewers that allow seeing Augmented Reality preview on both iOS and Androids. Some WebAR viewers convert it automatically for you such as Vectary WebAR [3].

Step-7: Find the path of stored 2D-Images from website and replace it with Directory-3/Img_N file content.

Step-8: Replace the Image in HTML page with respective USDZ file from Directory-3.

3. Conclusion

We are able to change a normal website to AR-website with the approach followed as explained in the paper.

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