

Processor System Architecture, Processor Specifications

AR System Architecture

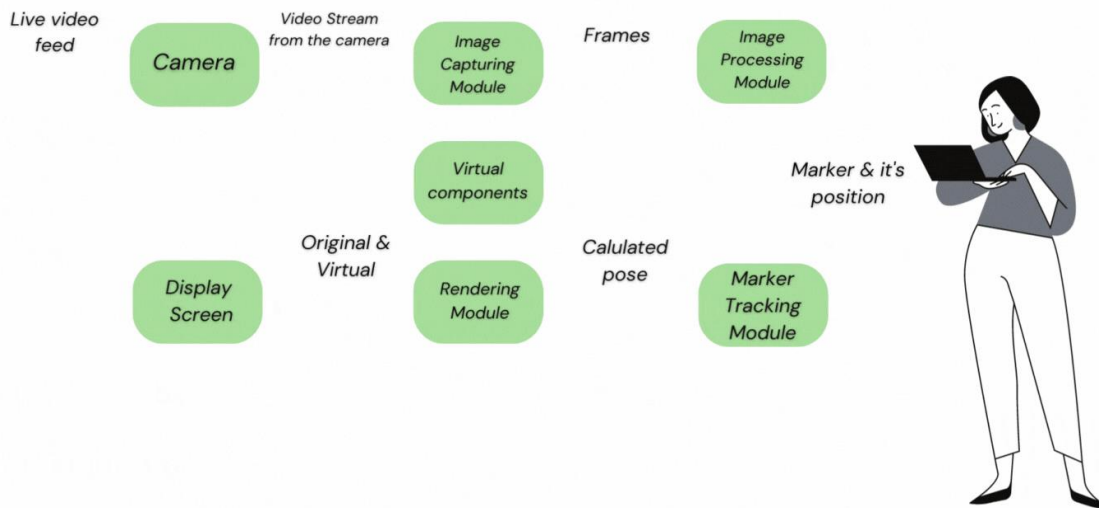
Before starting to schematize the AR system architecture, we need to explore some concepts.

1 - Recognition : also known as object detection, it's the identification of any object/media such as QR code, Barcode, Images...and attaches a digital 3D model to a real-world object

2 - Tracking points: these are simply specific patterns present in an image that an AR application can recognize. Once the app detects those patterns, it constantly tracks their position in real world space to accurately place the digital object into the marker that is being tracked.

3 - Image unwarping : is a process to unwarpage a part of the image to facilitate the recognition.

Understanding the architecture



- The capturing module captures the video from the live video feed which is divided by frames.
- Those frames are going to the image processing module where the marker is detected and tracked.
- Then the tracking module ; calculates the pose (6 degrees of freedom; refers to the freedom of movement of a rigid body in three-dimensional space.) of the camera in real time
- Next it's passed to the rendering module which combine the digital object with the real world visual to generate the augmented image !

Processor Specifications

Augmented/Virtual reality (and 3D development in general) demands high-end hardware. However, as the price of hardware is constantly going down, this may not represent a big problem as it did a few years ago.

If we take a look at the requirements of the two most popular VR platforms (HTC Vive and Oculus Rift), we'll see they are basically the same. At the time of this writing, these are the recommended hardware specifications:

- Processor: Intel Core i5-4590 or AMD FX 8350
- Graphics: NVIDIA GeForce GTX 1060 or AMD Radeon RX 480
- Memory: 8 GB RAM
- Ports: 3x USB 3.0
- Operating System: Windows 7 or superior

Does it mean that if you have an i3 processor or a GTX 1050 card you won't be able to do any development work?

It depends.

The above are the recommended specifications to have a smooth experience, so for some projects, maybe a little less would do the work, and for others, maybe you'll have to compensate for the lack of power in one area with an increase of power in another one (for example, by pairing an i3 processor with a GTX 1070).

There are minimum requirements and tools to make sure your hardware is compatible (here and here), but the suggestion is to try to aim for the higher end and use desktop PCs to have an easy (and cheaper) upgrade path.