Technical proposals for accurate AR

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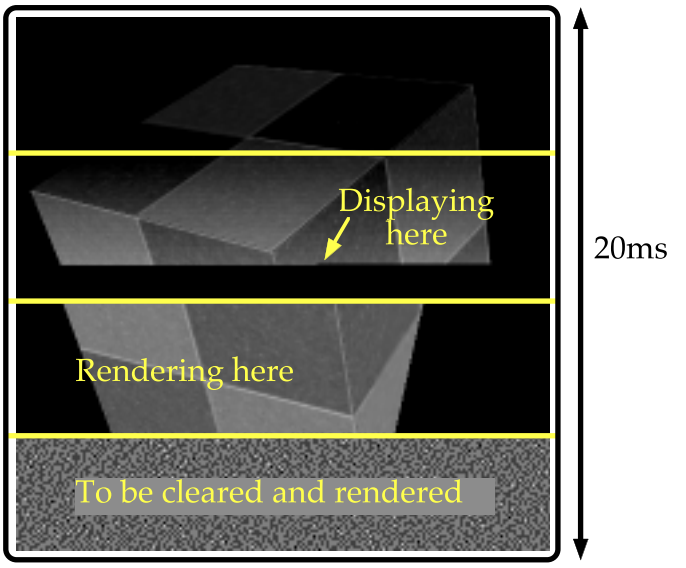
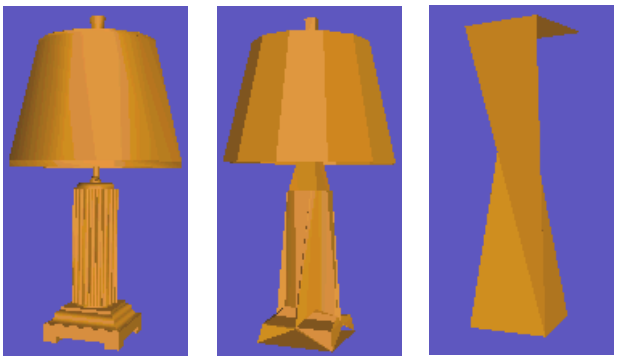
Low-latency rendering

Standard display systems take 20 ms to refresh the display, which is already twice the maximum acceptable latency. Therefore we plan to render just ahead of the raster beam instead of rendering a full frame at once. In this example latency is reduced from 20 to 10 ms.



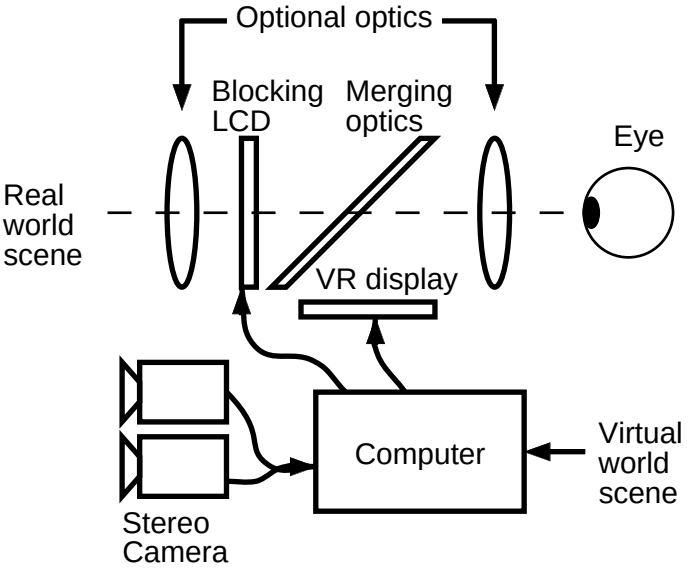


Reducing processing power

To reduce processing power in the mobile unit, the virtual world will be simplified depending on the actual viewpoint of the observer. Research is needed to find out what is the best way to do this.
The number of polygons in a scene can be reduced drastically (10.000 in the left, 474 in the middle, 34 in the right model) and may be sufficient depending on the viewpoint (from D. Luebke @ Virginia).

Removing real objects

In order to make a real object less or invisible we need to block the light coming from the object. Light from the real world first goes through a blocking LCD, which can dim light coming from parts of the real world. Next, the light is merged with the virtual world. The stereo camera allows reconstruction of the depth of real objects, so that the virtual objects can be merged with them appropriately .



ubiquitous communications

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