RECURSIVE AUGMENTED REALITY

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In our project, we will implement an augmented reality system that can overlay a digital image on video of a real world environment. We begin by reading NTSC video from a video camera and storing it in a RAM array on the FPGA. We then perform chroma-based object recognition to recognize in the video the corners of a picture frame that have been marked with colored spots. Using the location of these corners, we apply appropriate translation, scaling, rotation, and possibly skew to an image so that it lines up with the edges of the frame. We then output VGA video of the original captured image, with the processed image overlayed on top of the frame. The overlay image (the "augmentation") can be arbitrary, or, when it is the same as the overall captured image, we call the system "recursive." The process of scaling, translating, rotating, and skewing can be repeated several times to give deeper recursion.