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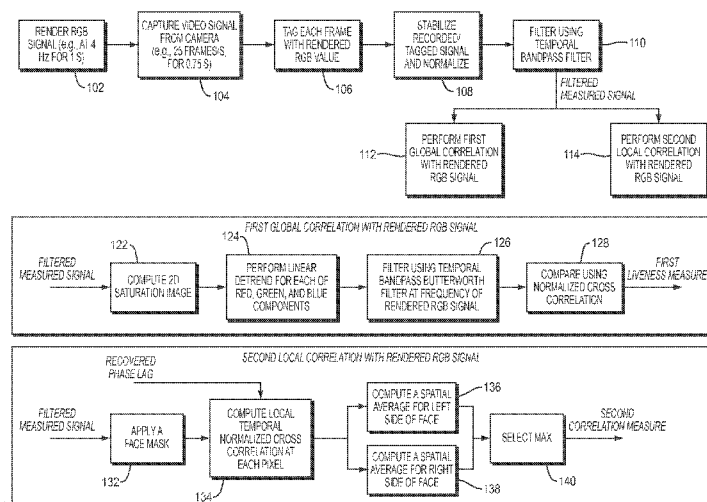


FIG. 1

(57) Abstract: In a system for determining liveness of an image presented for authentication, a reference signal is rendered on a display, and a reflection of the rendered signal from a target is analyzed to determine liveness thereof. The analysis includes spatially and/or temporally band pass filtering the reflected signal, and determining RGB values for each frame in the reflected signal and/or each pixel in one or more frames of the reflected signal. Frame level and/or pixel-by-pixel correlations between the determined RGB values and the rendered signal are computed, and a determination of whether an image presented is live or fake is made using either or both correlations.