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(54) **PLANAR SURFACE DETECTION**

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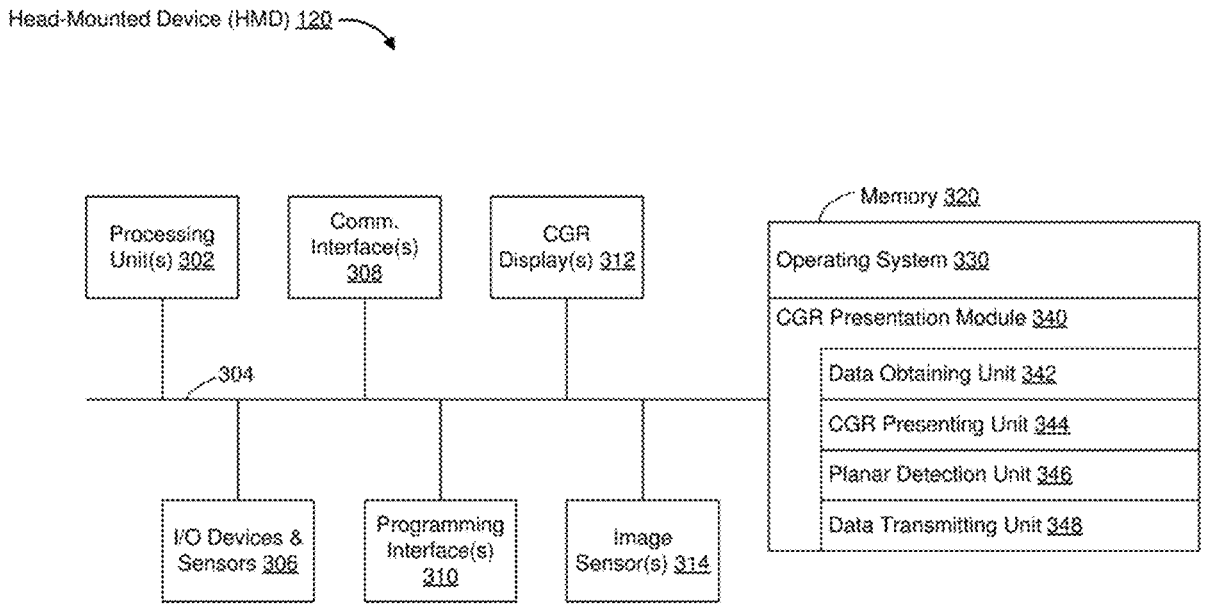
(57) **ABSTRACT**

In one implementation, a method of generating a horizontal plane hypothesis includes obtaining a point cloud of a scene including a plurality of points in a gravity-aligned coordinate system. The method includes generating, based on the plurality of points, a height histogram indicative of a plurality of non-overlapping height ranges in the gravity-aligned coordinate system and a respective plurality of weights. The method includes generating one or more horizontal plane hypotheses based on the height histogram.