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(54) Title: SYSTEM AND METHOD OF OPERATION FOR REMOTELY OPERATED VEHICLES WITH IMPROVED POSITION ESTIMATION

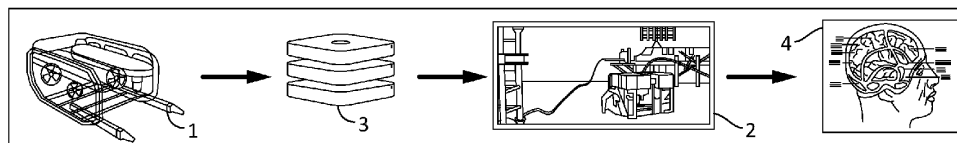


FIG. 1A

(57) Abstract: The present invention provides a system and method of position estimation for remotely operated vehicles, even in noisy environments. In some embodiments, a position estimation engine includes a 2D projection module, a registration module, a position estimation module, and an efficiency module. The improved position estimation starts with a real frame from a video and a virtual image that is the projection of the 3D elements given the ROV's noisy position. The position estimate begins by projecting each of the visible structures individually and then registers them with the real image. Then the 2D transformation resulting from the registration process is used to estimate the 3D ROV's position. Then, the ROV's position estimates are robustly combined. Because this position estimation needs to run in real-time or near real-time, an efficiency module improves the efficiency of the position estimation.

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