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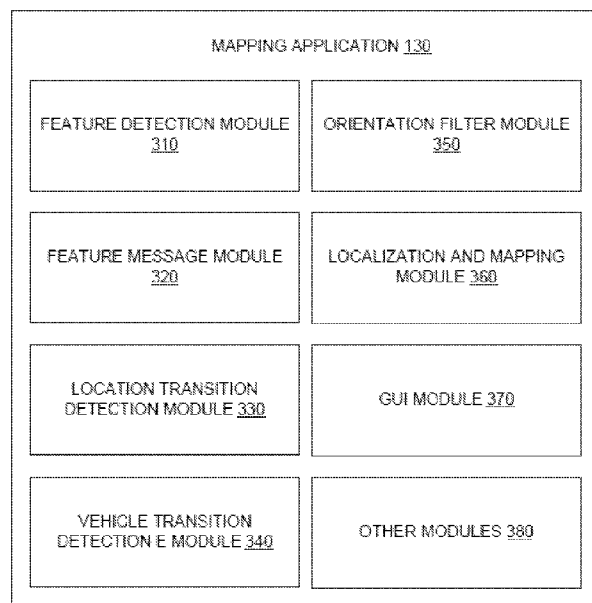
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(54) Title: SYSTEM AND METHOD FOR LOCALIZING A TRACKEE AT A LOCATION AND MAPPING THE LOCATION USING INERTIAL SENSOR INFORMATION

**FIG. 3**

(57) Abstract: A system and method for recognizing features for location correction in Simultaneous Localization And Mapping operations, thus facilitating longer duration navigation, is provided. The system may detect features from magnetic, inertial, GPS, light sensors, and/or other sensors that can be associated with a location and recognized when revisited. Feature detection may be implemented on a generally portable tracking system, which may facilitate the use of higher sample rate data for more precise localization of features, improved tracking when network communications are unavailable, and improved ability of the tracking system to act as a smart standalone positioning system to provide rich input to higher level navigation algorithms/systems. The system may detect a transition from structured (such as indoors, in caves, etc.) to unstructured (such as outdoor) environments and from pedestrian motion to travel in a vehicle. The system may include an integrated self-tracking unit that can localize and self-correct such localizations.



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