ORB-SLAM: a Versatile and Accurate Monocular SLAM System

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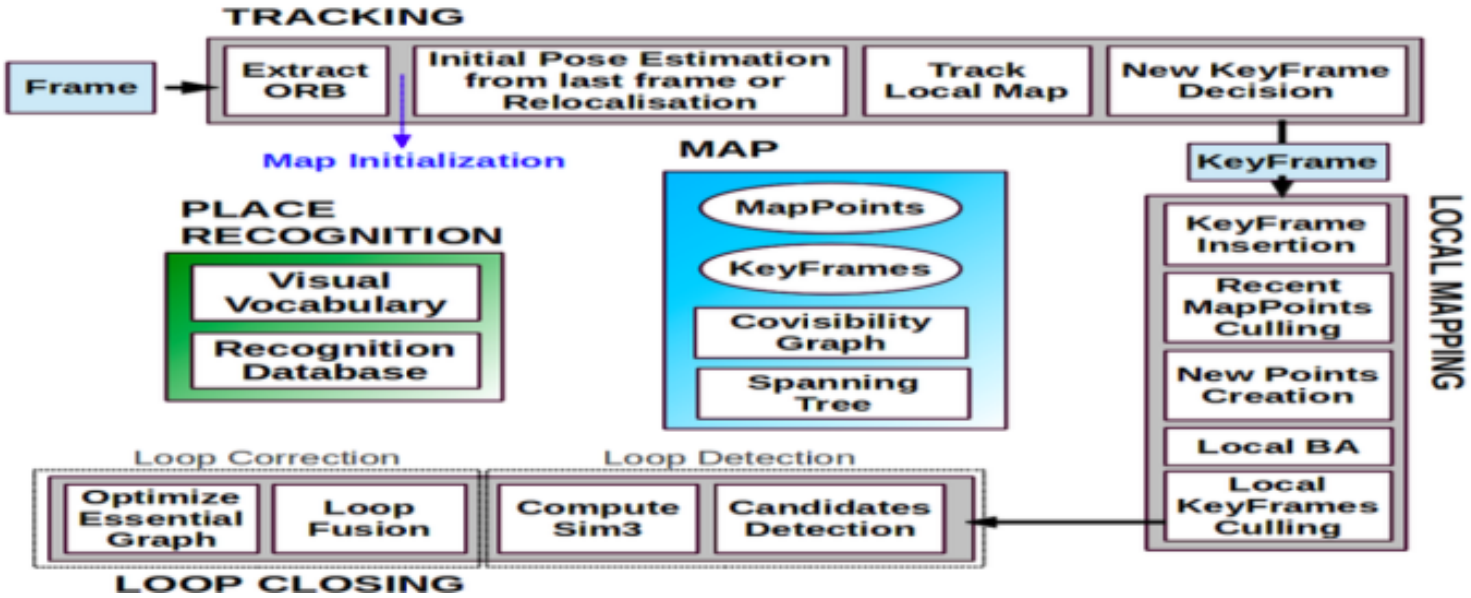

- Proposes a feature-based monocular SLAM system that operates in real time, in small and large, indoor and outdoor environments
- Contributions:
  - Uses same features for all tasks: tracking, mapping, relocalization and loop closing
  - Real time operation in large environments
  - Real time loop closing based on the optimization of a pose graph
  - Real time camera relocalization with significant invariance to viewpoint and illumination
  - New initialization procedure based on model selection
  - A survival of the fittest approach to map point and keyframe selection
- Evaluates on sequences from NewCollege, TUM RGB-D and KITTI datasets