Object detection:

* Localization as regression problem. Works poorer than this approach
* Sliding window
* Recognition using regions
* Scale-space pyramid

Distance measurement and path planning

* Stereo Vision
* Strucutre from motion – open source software available - The most popular is Microsoft Photosynth (http://photosynth.net)—inspired by the research work on Photo Tourism [355]—which is based on the very popular open-source software Bundler (available at http://phototour.cs.washington.edu/bundler) and described in [297] and [298]. Very useful and fully open-source tools for on-line processing are: the Parallel Tracking and Mapping (PTAM) tool [358], the Vodoo camera tracker [356], and the ARToolkit [357].
* Visual odometry – motion from visual input alone
* Floor plane extraction with color segmentation