

Edge-based Tracking of Rigid Objects using a Particle Filter

Edge-based object tracking is famous for its low computational complexity which allows for real-time applications. One of the first successful implementations was a tracker called Rapid. To this day it is the basis of many modern tracking systems. The main idea is to consider a set of 3D points on model edges which are most likely to project to high-contrast edges. The displacement of these projections then help to recover the 3D motion of the object.

One of the disadvantages of the plain rapid tracker is the need for manual initialization which also affects the re-initialization in case of a tracking failure. To overcome this problem we propose a reformulation of the original Rapid tracking into a framework using a particle filter, which fuses edge information with color information of the object to make tracking more robust.