The growing automatic surveillance systems spread—together with the informatics field technologic progress—has allowed the development of systems able at performing the identification of the objects in the monitored scene.

The technique developed in the current thesis is devoted to the development of a system allowing the tracking of moving objects inside a complex scene most of all in occlusion situations.

More precisely the design of an algorithm is pursued that is able to keep the objects subject to a superimposition on the image plane separate, allowing the tracking along consecutive frames.

In the presented work the studied system aims at exploiting the non-linearity and multi-hypotheses features of the Particle Filter to integrate objects’ movement and shape information and perform the tracking.

The obtained results demonstrate the validity of the approach taking into account different scene complexity levels.