

Coordinated 3D-Information Mining of Big Visual Data for Smart City

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Abstract:

With the huge amount of networked video cameras available everywhere nowadays, such as the statically deployed surveillance cameras or the constantly moving cameras on the vehicles or drones, there is an urgent need of systematic and coordinated mining of the dynamic environment in the 3D physical world coordinates based on the collected big visual data from large scale of cameras, which can be exploited for various smart city applications, such as security surveillance, intelligent transportation, business statistics collection, health monitoring of communities, and etc.

In this talk, I will first present an automated and robust human/vehicle tracking directly in 3D space through self-calibration of static and moving monocular cameras. These cameras are also continuously learning the temporal and color/texture appearance characteristics among one another in a coordinated and fully unsupervised manner so that the object tracking across multiple cameras can be effectively integrated and reconstructed in the 3D real-world space. Once all the moving targets are tracked and 3D localized with trajectory information, we can further infer the 3D pose information and actions of the tracked human for better understanding of the behaviors of monitored environments.