

## Method And System For Multi-Object Tracking

### ABSTRACT

A method and system for multi-object tracking in a video signal. The method comprises the steps of receiving first and second segmented images of two consecutive frames of the video signal respectively, at least one of the first and second segmented images including one or more foreground regions, each foreground region corresponding to one or more objects to be tracked; generating one or more directed acyclic graphs (DAGs) for zero or more parent nodes in the first segmented image and zero to more child nodes in the second segmented images, each DAG including at least one parent or child node; and for each parent node having two or more child nodes, a) sorting the corresponding objects of the foreground region contributing to said each parent node according to estimated depth in said first image; b) assigning the corresponding object having the lowest depth to one of the child nodes of said each parent node; c) removing a visual content of the assigned corresponding object from the visual data associated with said one child node; and iterating steps b) to c) in order of increasing depth of the corresponding objects for assigning all corresponding objects to the two or more child nodes; and then for each child node having only one corresponding object assigned thereto, update a state and the visual content of said one object based on the second image; for each child node having two or more corresponding objects assigned thereto, d) sorting the corresponding objects according to estimated depth in said each child node in said second image; e) applying a means-shift calculation to locate the corresponding object having the lowest depth in said each child node; f) updating the state and the visual content of the located corresponding object based on the second image; g) removing the updated visual content of the located corresponding object from the visual data associated with said each child node; and iterating steps e) to g) in order of increasing depth of the corresponding objects for locating all corresponding objects in a corresponding region of said each child node.

FIG. 5