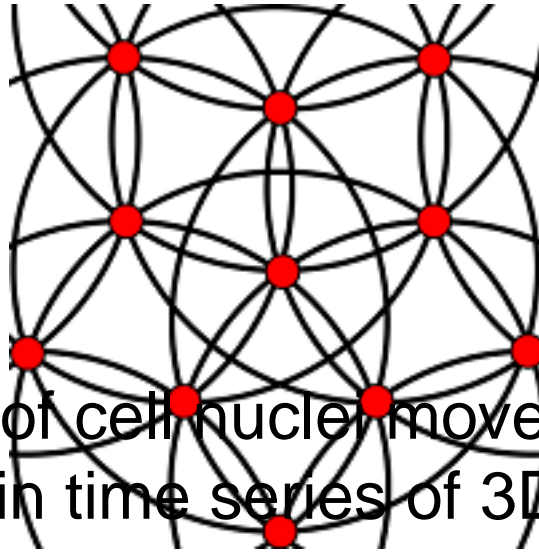


# CSASC 2013



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## Tracking of cell nuclei movement and division in time series of 3D images

### Content :

We present a method for tracking the cell movement and divisions in early zebrafish embryo development. First, we create an approximate segmentation of 4D tubular structures representing time-space cell nuclei shapes. Then we compute a combined 4D distance function  $d_1$  using all cell nuclei identifiers in all time steps and a 4D distance function  $d_2$  from the boundaries of the segmented tubular structures. Using the difference of these two distance functions  $d_1 - d_2$  we construct a potential field in which a backtracking in the steepest descent direction gives cell trajectories. The computational results, their visualization and further analysis will be presented.

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