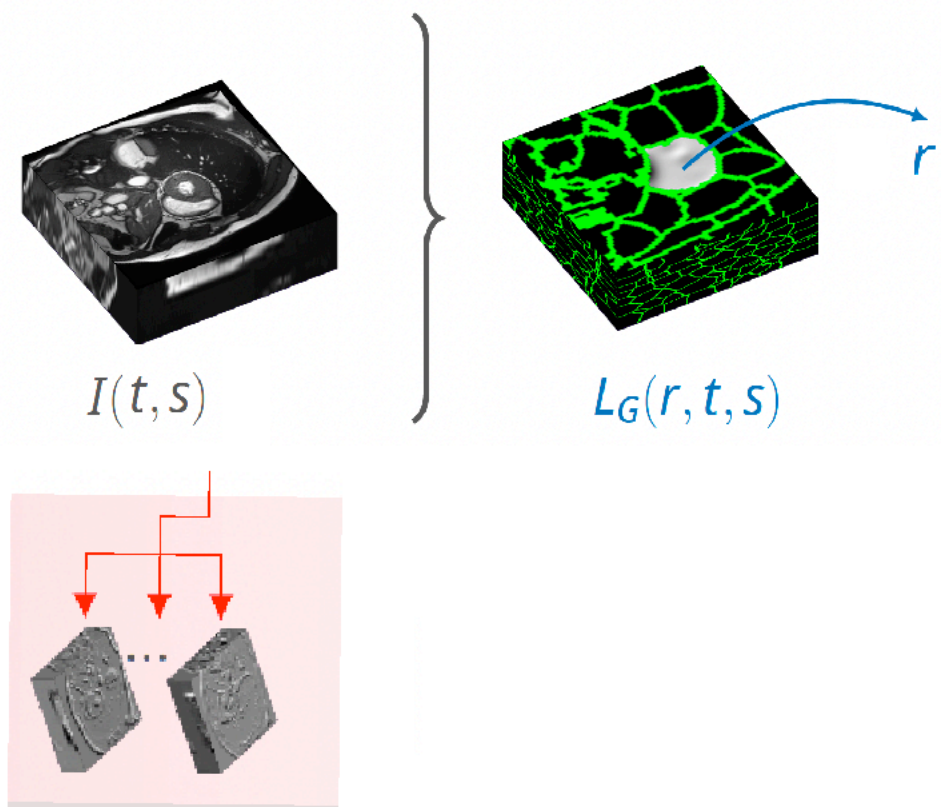
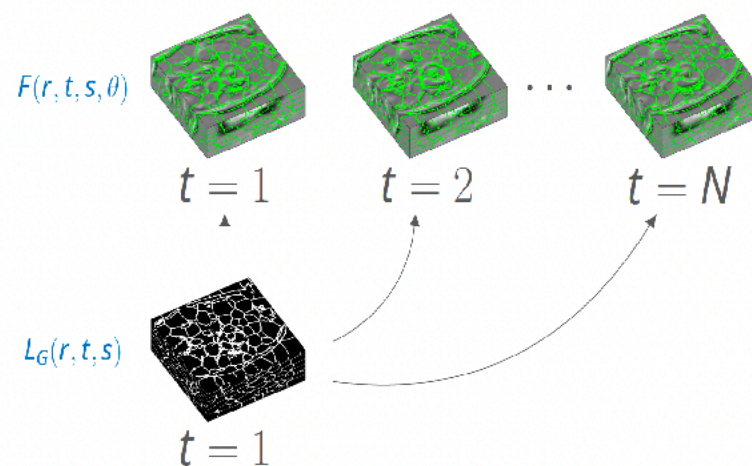


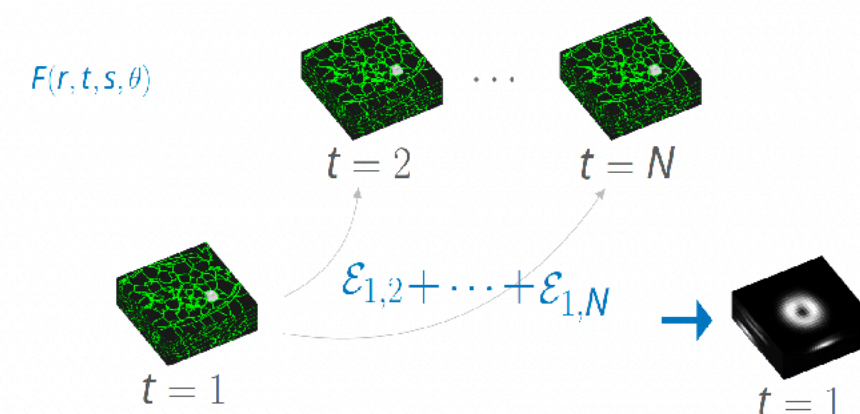
A region r is a set of voxels with homogeneous intensity values (supervoxels)^a



Regions at time t are superimposed to the sequence of oriented features



The local oriented motion for time t is the summation of all differences in orientation θ



$$\mathcal{E}(r,t,s,\theta) = \sum_{\tau=1}^N \|F(r(t,s), t, s, \theta) - F(r(t,s), \tau, s, \theta)\|^2 \quad (14)$$

Every scale is also decomposed in oriented features in direction θ

Using a directional kernel G^θ that is convolved with the image



$$G^\theta = \cos(\theta)G^{0^\circ} + \sin(\theta)G^{90^\circ}$$

where G is the first derivative of the 2D Gaussian function.
 $\theta = \{0^\circ, 45^\circ, 90^\circ, 135^\circ, 180^\circ, 225^\circ, 270^\circ, 315^\circ\}$