

# Static, Quasi-Static and Dynamic Analysis of a scaled Perona-Malik Functional

- Consider sequence of ( scaled Perona-Malik ) functionals defined on a discrete lattice  $\varepsilon\mathbb{Z} \cap [0, 1]$ .

$$F_\varepsilon(u) := \sum_{i=1}^{N_\varepsilon} \frac{1}{|\log \varepsilon|} \log \left( 1 + |\log \varepsilon| \frac{|u_i - u_{i-1}|^2}{\varepsilon} \right). \quad (1)$$

- A well known result guarantees that (1)  $\Gamma$ -converge to the Mumford-Shah functional

$$M_s(u) = \int_0^1 |u'|^2 + \#(S(u)) \quad (2)$$

We want to understand **analogies** and **differences** between Perona-Malik and Mumford-Shah functional in:

- Structure of local and global minima
- Quasi-Static motion
- Dynamic evolution ( minimizing movement )