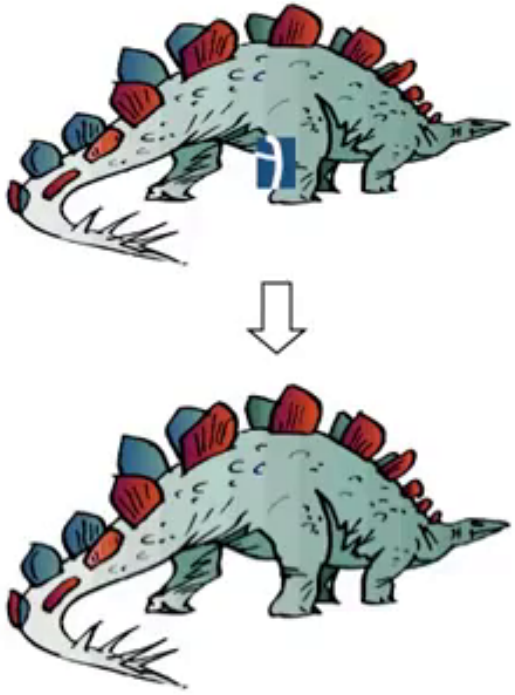
How conservators fill-in

Interpolate the gray values given the edges



$$\theta = \text{normalized gradient} \Rightarrow \theta \bullet \nabla I = \|\nabla I\|$$

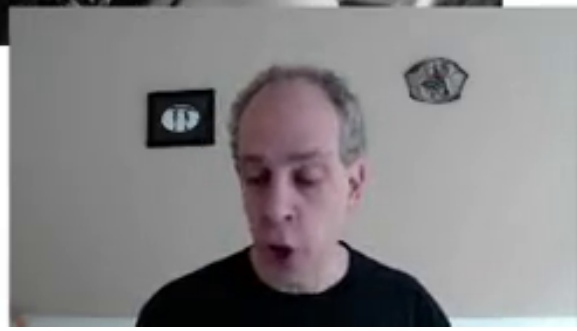
$$\min(I) \int_{\Omega \cup Band} (\|\nabla I\| - \theta \bullet \nabla I)\, d\Omega$$

$$\frac{\partial I}{\partial t} = div\left(\frac{\nabla I}{\|\nabla I\|}\right) - div(\theta)$$

$$\theta = \frac{\nabla I}{|\nabla I|}$$

$$= 0$$

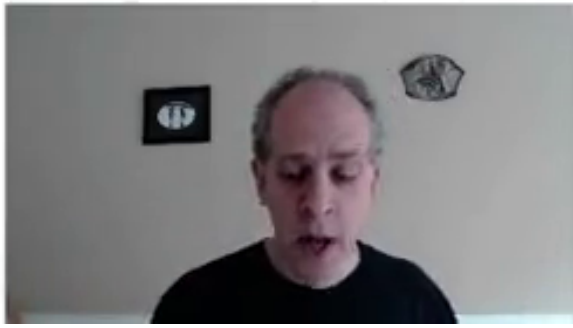
Example



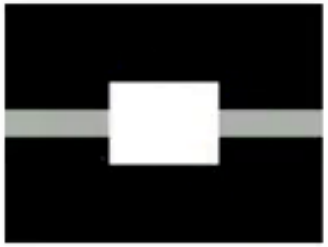
The full functional

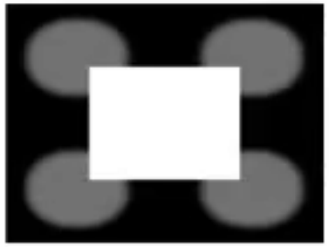
$$\min(I,\theta) \int_{\Omega \cup Band} div(\theta)^p (a + b\|\nabla G * I\|) + c(\|\nabla I\| - \theta \bullet \nabla I)$$

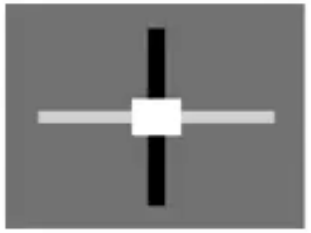
- **Solved via E-L: Coupled 2nd order PDEs**

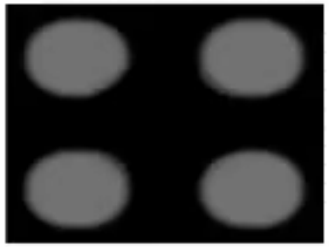


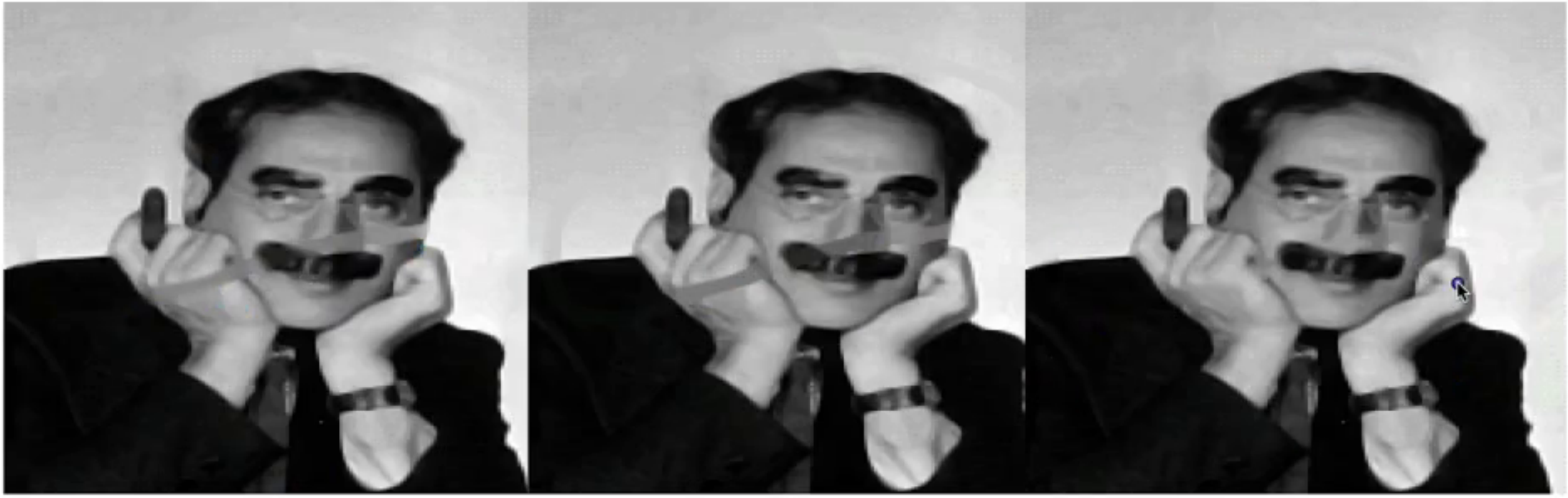
Examples











Examples


Il Castello di Miramare e i
suo parco sorsero sul promo
torio roccioso d'origine ca
sica di Grignano, per volon
dell' arciduca Ferdinando M
ssimiliano d'Asburgo (1832-
fratello minore dell'impera
austriaco Francesco Giusepp
Progettato nel 1856 da Carl
terminato nell'aspetto este
nel 1860. La sistemazione d
e la decorazione interna, o
e Julius Hofmann, furono ul
dopo la partenza di Massimi
per il Messico nel 1864. No
imperatore del Messico, Mas
venne fucilato a Queretaro
1867. Tra i pochissimi esem
di una dimora nobile conser
senza rifacimenti, il Caste

Inpainting and Image Decomposition