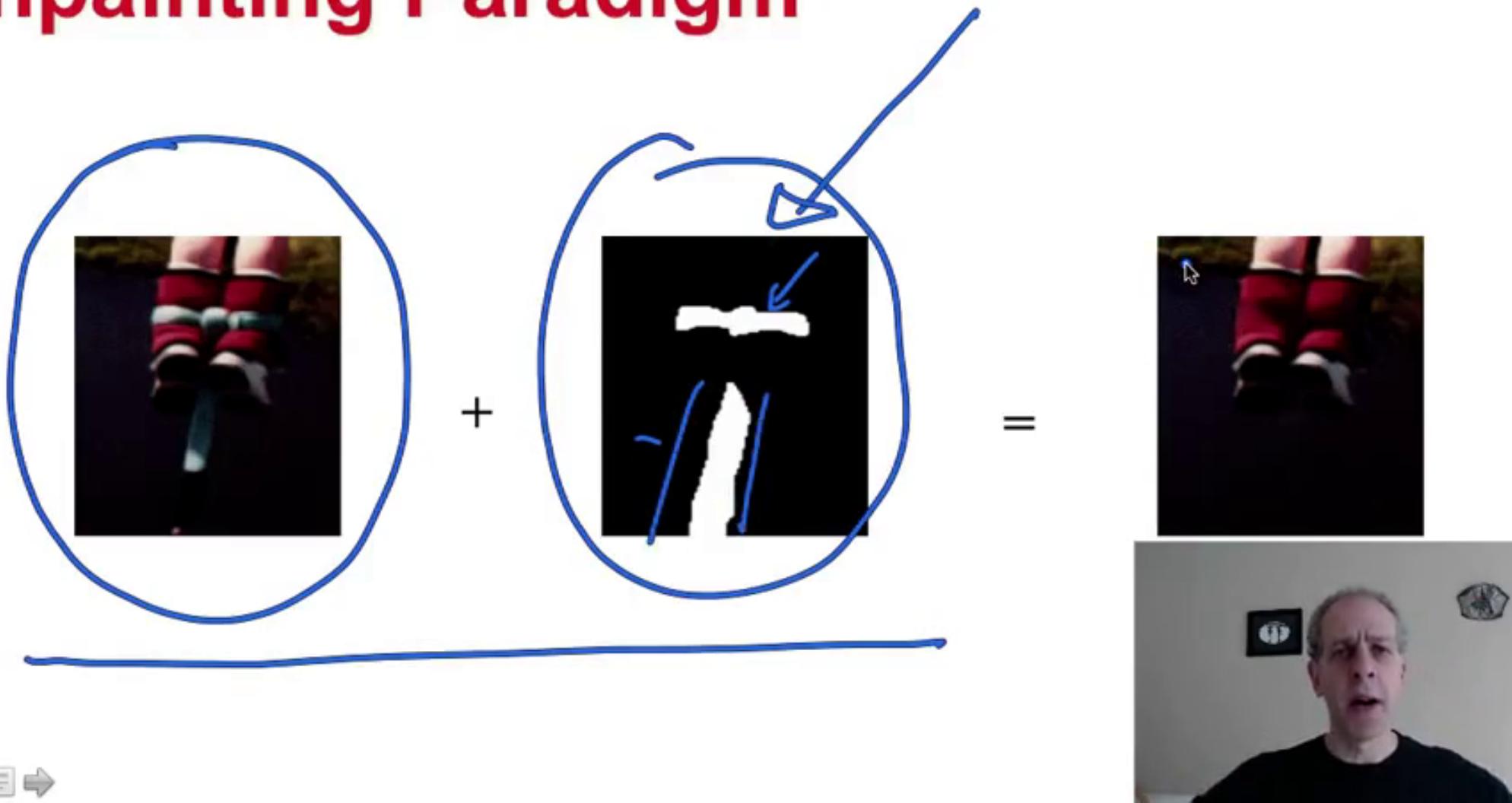
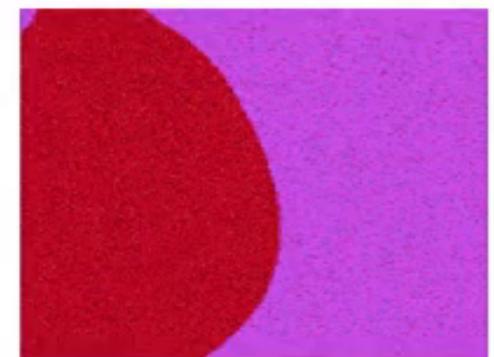
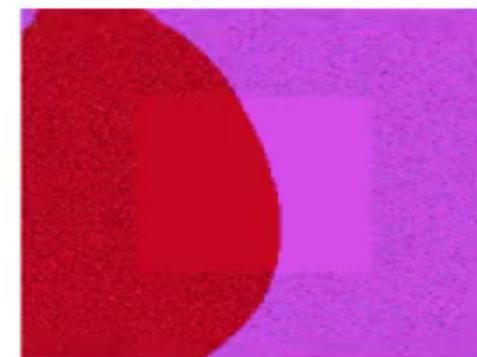
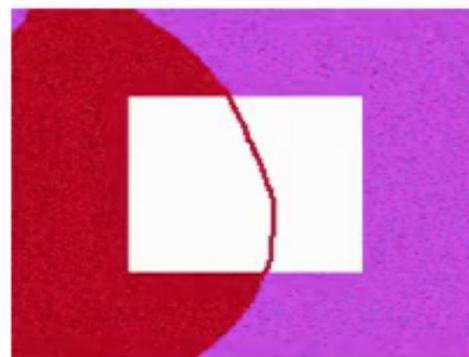
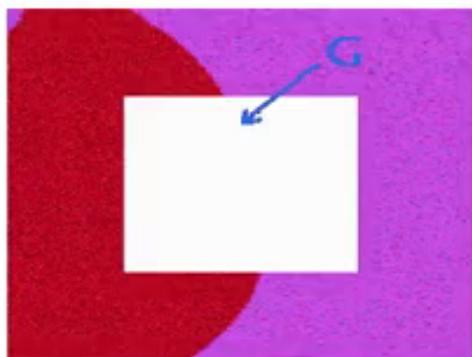


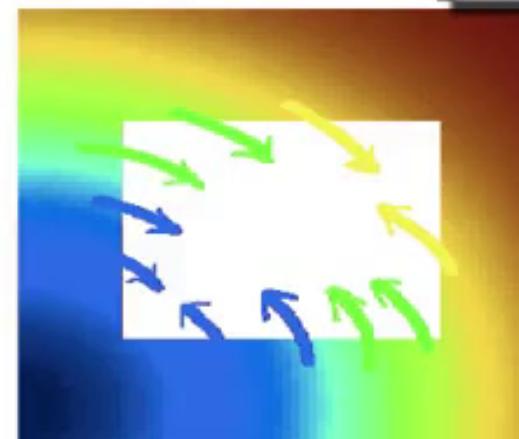
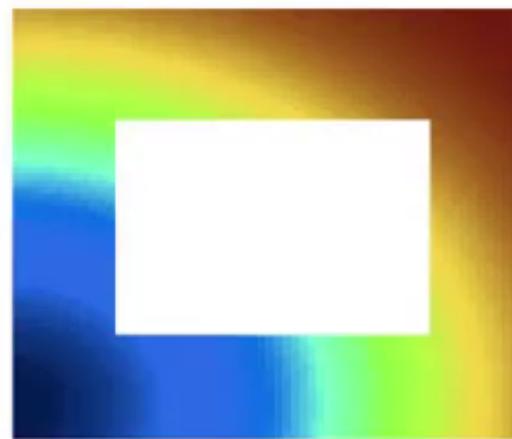
Inpainting Paradigm



How conservators inpaint?



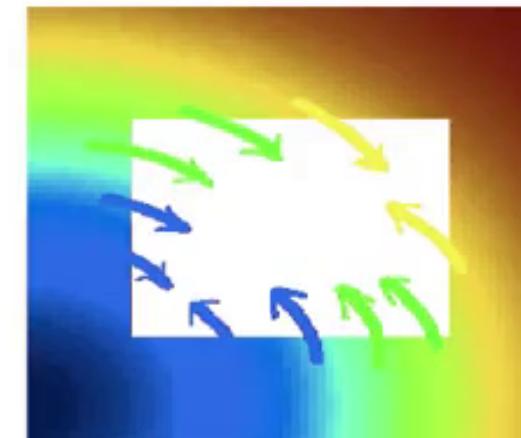
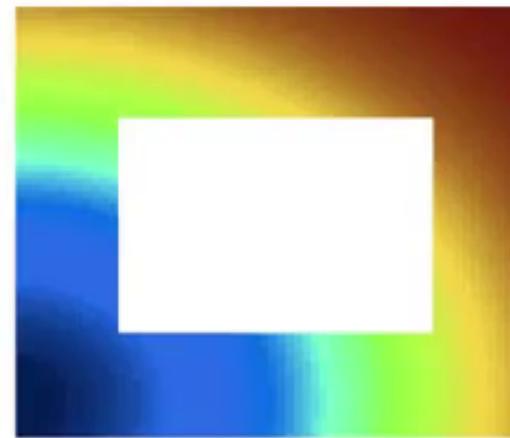
Automatic digital inpainting



$$\nabla L \cdot \vec{N} = 0$$

L = Information
 N = direction

Automatic digital inpainting



$$A = 0$$

$$\frac{\partial I}{\partial t} = A$$

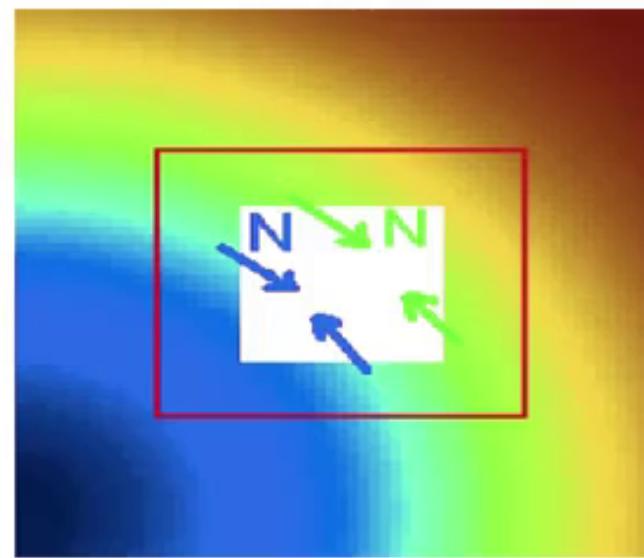
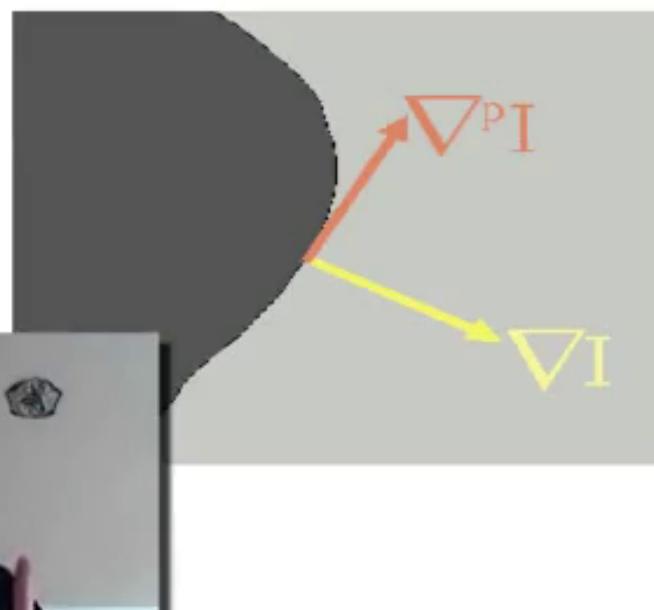


$$\nabla L \cdot \vec{N} = 0$$

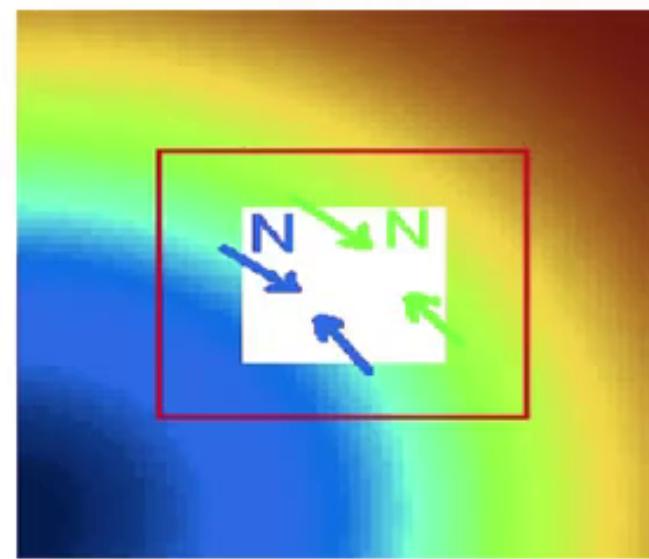
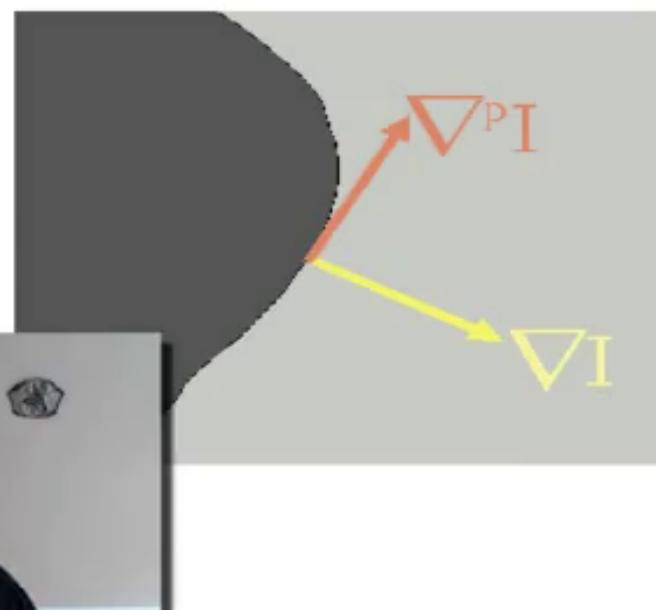
$$\textcircled{O} - \frac{\partial I}{\partial t} = \nabla L \cdot \vec{N}$$

- **L = smoothness estimator (Laplacian)**
- **N = isophote direction (time variant)**

$$N = \nabla I^+$$



- **L = smoothness estimator (Laplacian)**
- **N = isophote direction (time variant)**



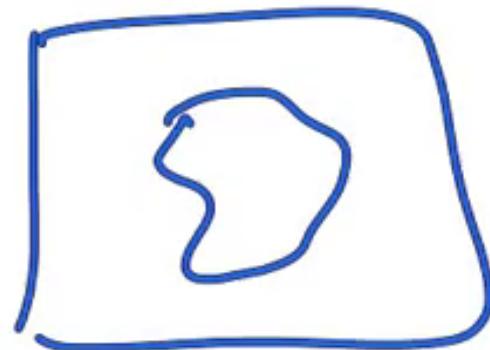
$$N = \nabla I^\perp$$

$$L = \nabla I$$

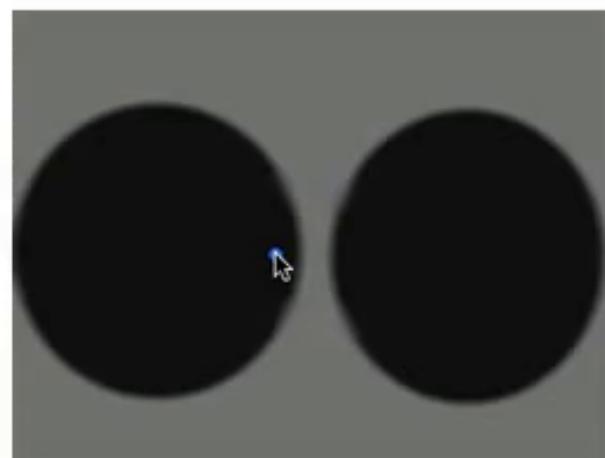
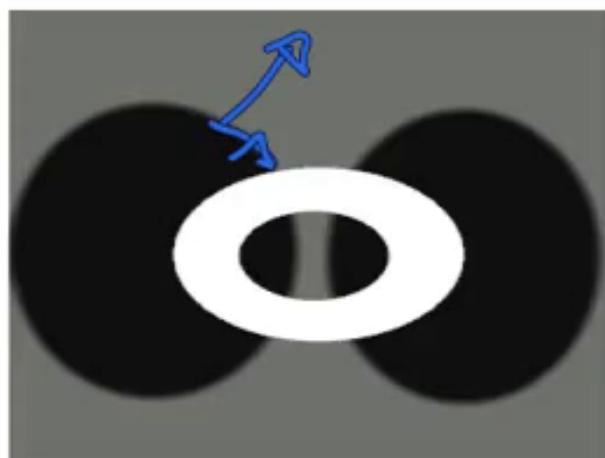
The equation

$$\Delta I = I_{xx} + I_{yy}$$

$$\frac{\partial I}{\partial t} = \nabla(\Delta I) \cdot \nabla^\perp I = 0$$

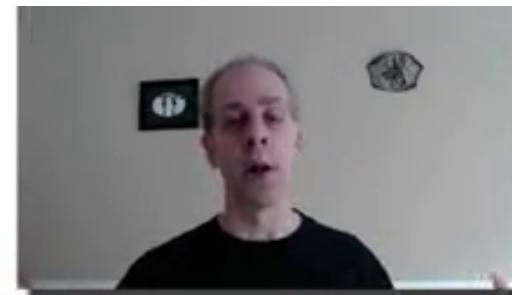


Example

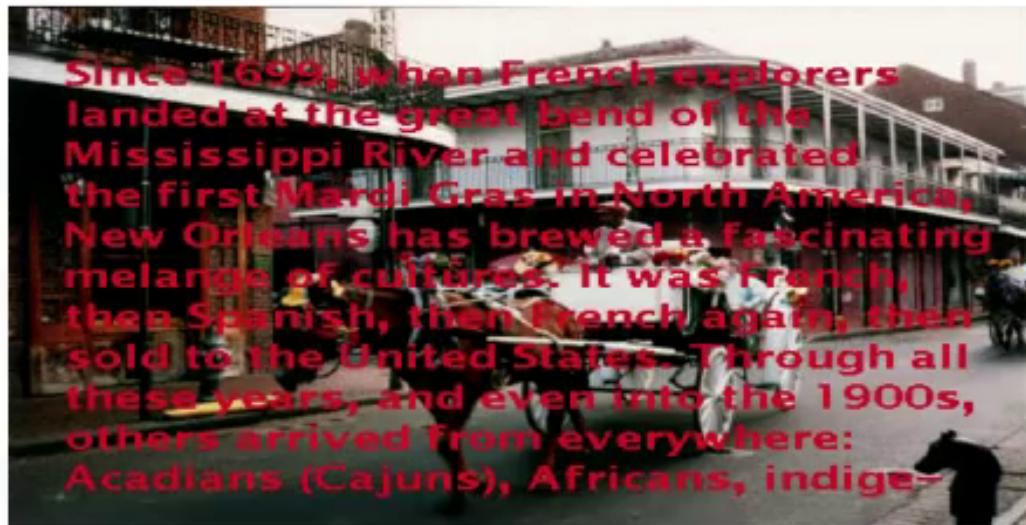


Courtesy of ACM





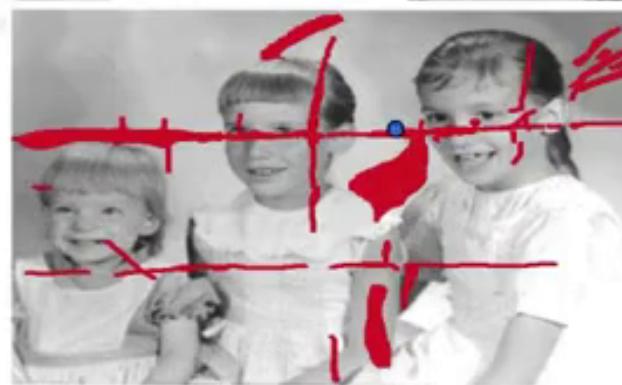
Example: Text removal



Courtesy of ACM

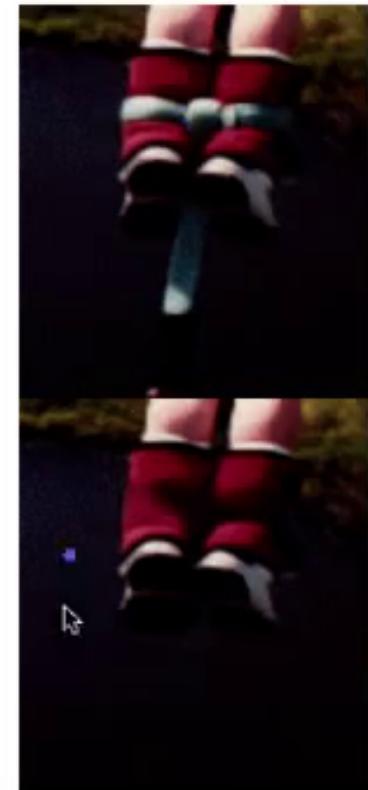
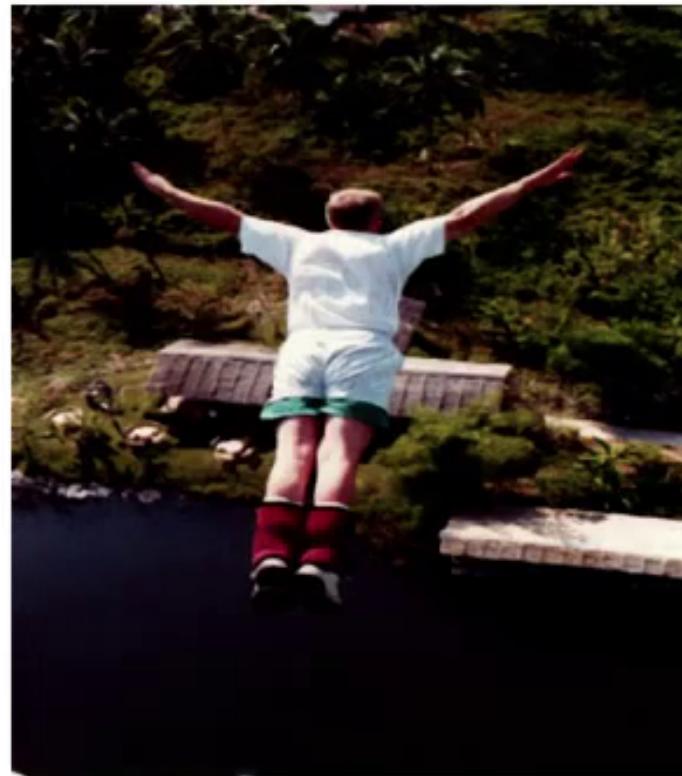


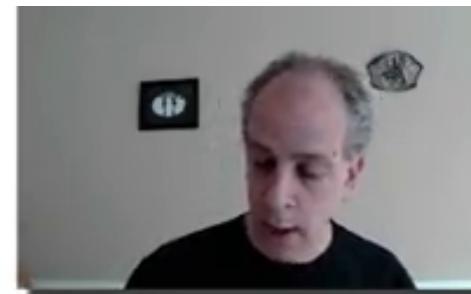
Example: Photo restoration



Courtesy of ACM

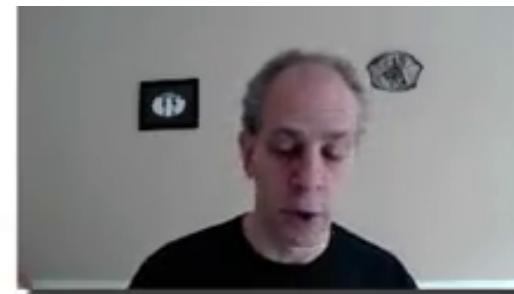
Example: Special effects





Example: Special effects





Example: Special effects

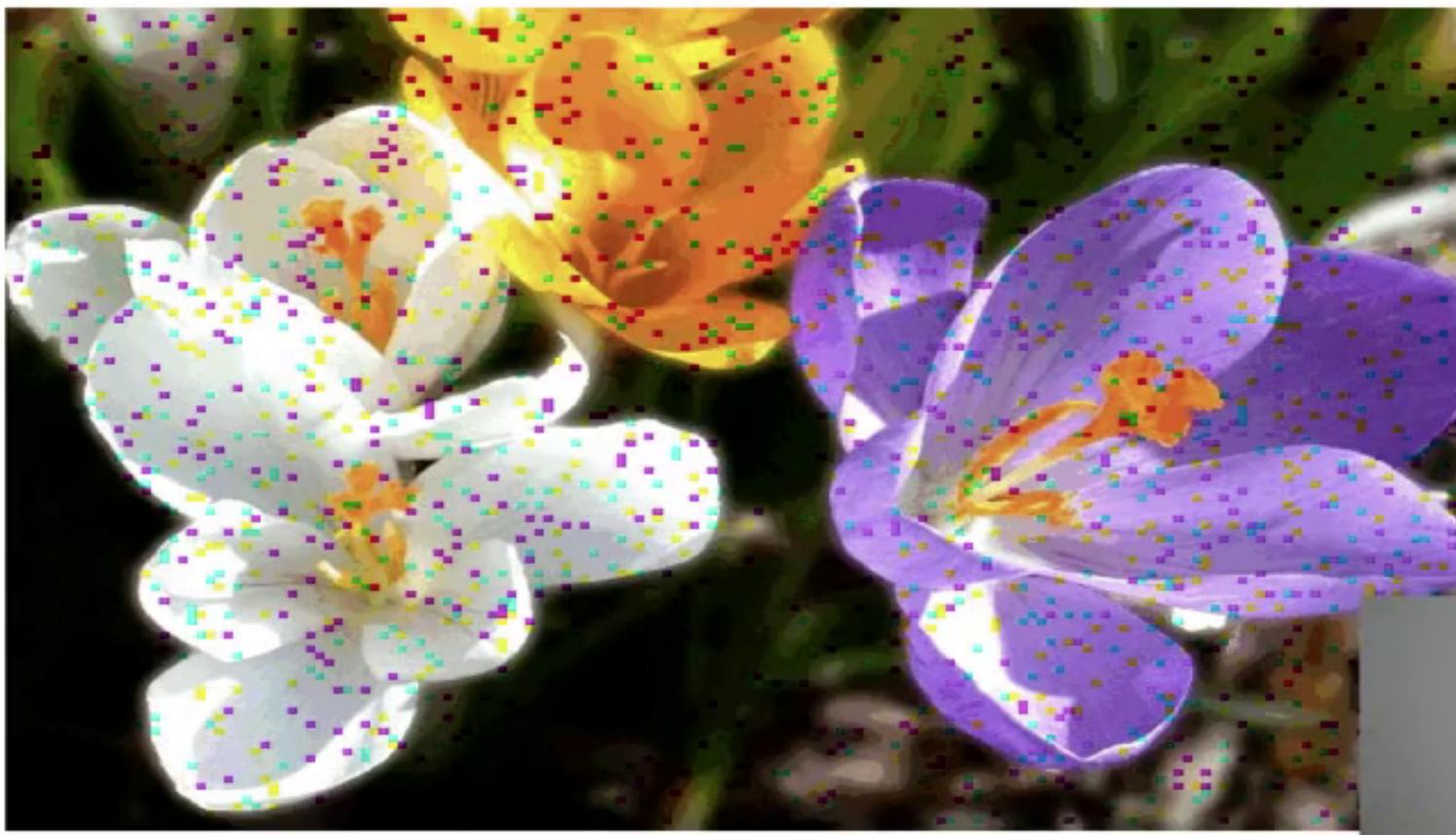


Wallpapersdirectory.com

Example: Scratch removal



Automatic image inpainting/interpolation for compression and wireless transmission



Courtesy
of IEEE



$$\mathbb{I}_t = \nabla(\Delta\mathbb{I}) \cdot (\nabla\mathbb{I})^\perp$$



Courtesy
of IEEE

