Original Video

Video pixel to UV map   UV map to Atlas

$M_b \rightarrow (u_b, v_b) \rightarrow A$

$\begin{pmatrix} x \\ y \\ t \end{pmatrix}$

$M_f \rightarrow (u_f, v_f) \rightarrow A \rightarrow R$

$M_\alpha \rightarrow \alpha$

Reconstruction Video

Sec. 3.1 *Video Decomposition via Layer Atlas*

Foreground Frames

Initilization (Sec 3.2.1)

Propagating points across frames

$\mathcal{L}_{semantic}$

Optimization

Rasterizer

For the same point $\hat{p}^n$ of different t_1 and t_2, do: $\mathcal{L}_{consistency}$

$\hat{p}_{t_1}^n \begin{pmatrix} x_1 \\ y_1 \\ t_1 \end{pmatrix}$

$\hat{p}_{t_2}^n \begin{pmatrix} x_2 \\ y_2 \\ t_2 \end{pmatrix}$

M_f

(u_1, v_1)

(u_2, v_2)

Sec. 3.2 *Video Sketching Optimization*