

AI in VFX


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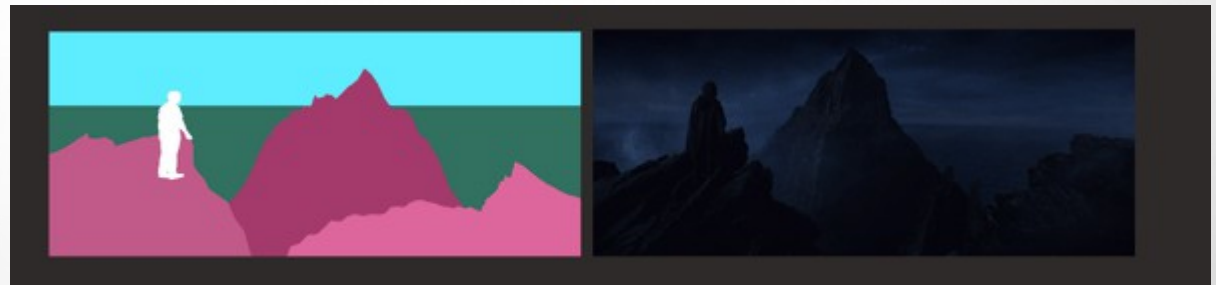
What will (not) be discussed

- **Techniques & technical developments**
- **Non-exhaustive**
- **No philosophical or ethical ramifications**

Use cases

Environmental and object generation

- **Automated image creation**
- **Nvidia GauGAN**
- **Domain tranfer**





Example-based image domain transfer

Often referred to as **Style Transfer**



Style photo



Content photo



Stylized content photo

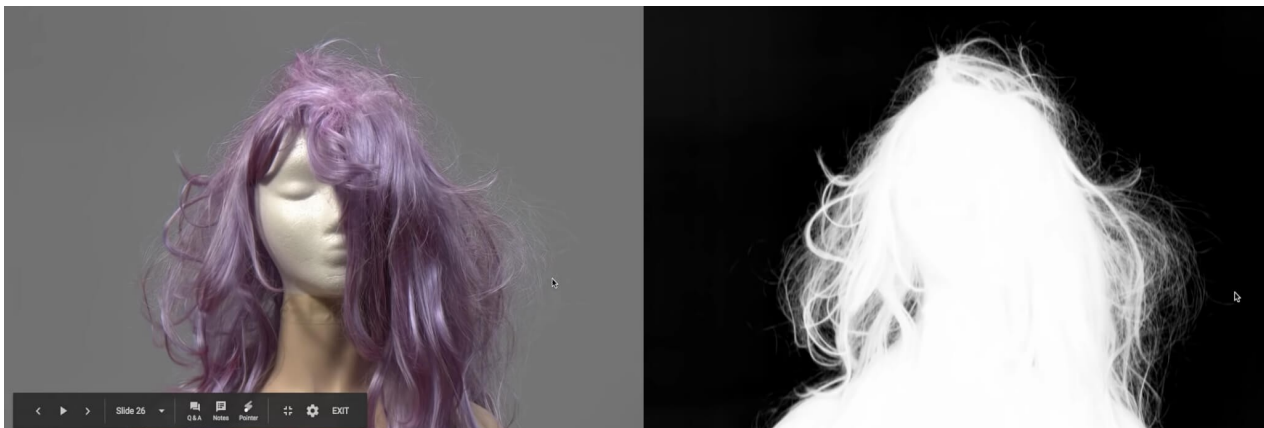
$$x_{\text{output}} = F(x_{\text{input}} | x_{\text{example}})$$



Rotoscoping

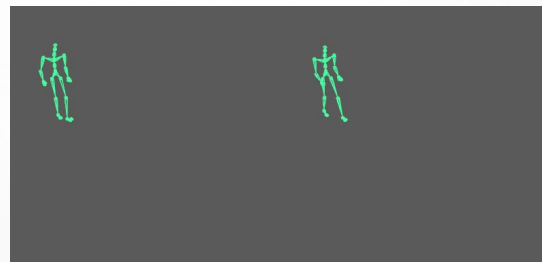
- **Cutting out the middle man**
- **Image segmentation**
- **Green screen**
- **Hair matte**





Motion capture

- **Auto body – face track**
- **Cleaning and enhancing**



Motion capture

- **Auto body – face track**
- **Cleaning and enhancing**
- **Thanos**





Color grading

- **Look and feel**
- **Weather changes**
- **Light changes**
- **Day for night**



An abstract graphic on the left side of the slide, composed of various overlapping triangles and polygons in different shades of blue, ranging from dark navy to light sky blue.

Other

- **In betweening**
- **Normal and depth map generation**
- **Editing**
- **...**

generative adversarial network in depth

Deepfakes



An abstract graphic on the left side of the slide, composed of various overlapping triangles and polygons in different shades of blue, ranging from dark navy to light sky blue.

Born in porn

- **Sub-Reddit - deepfake**
- **CNN and GAN**
- **User-friendly**
- **Rivalling Hollywood**

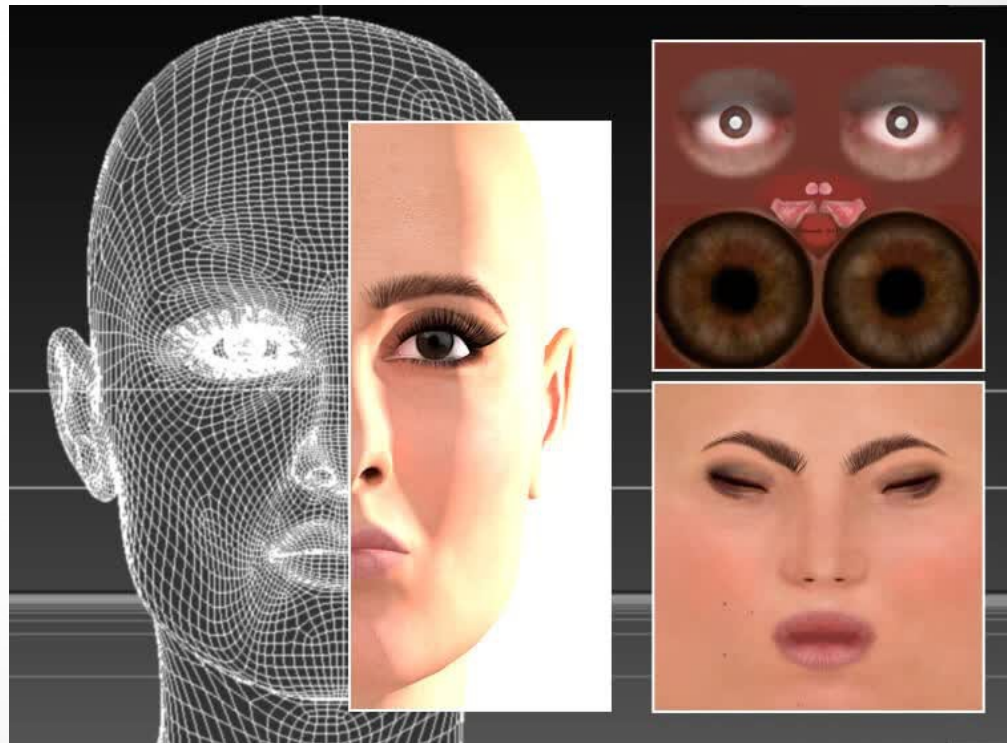


Disruption

- **Permission to fake**
- **Automation of CGI trades**

CGI mesh vs Deep Learning 'model'

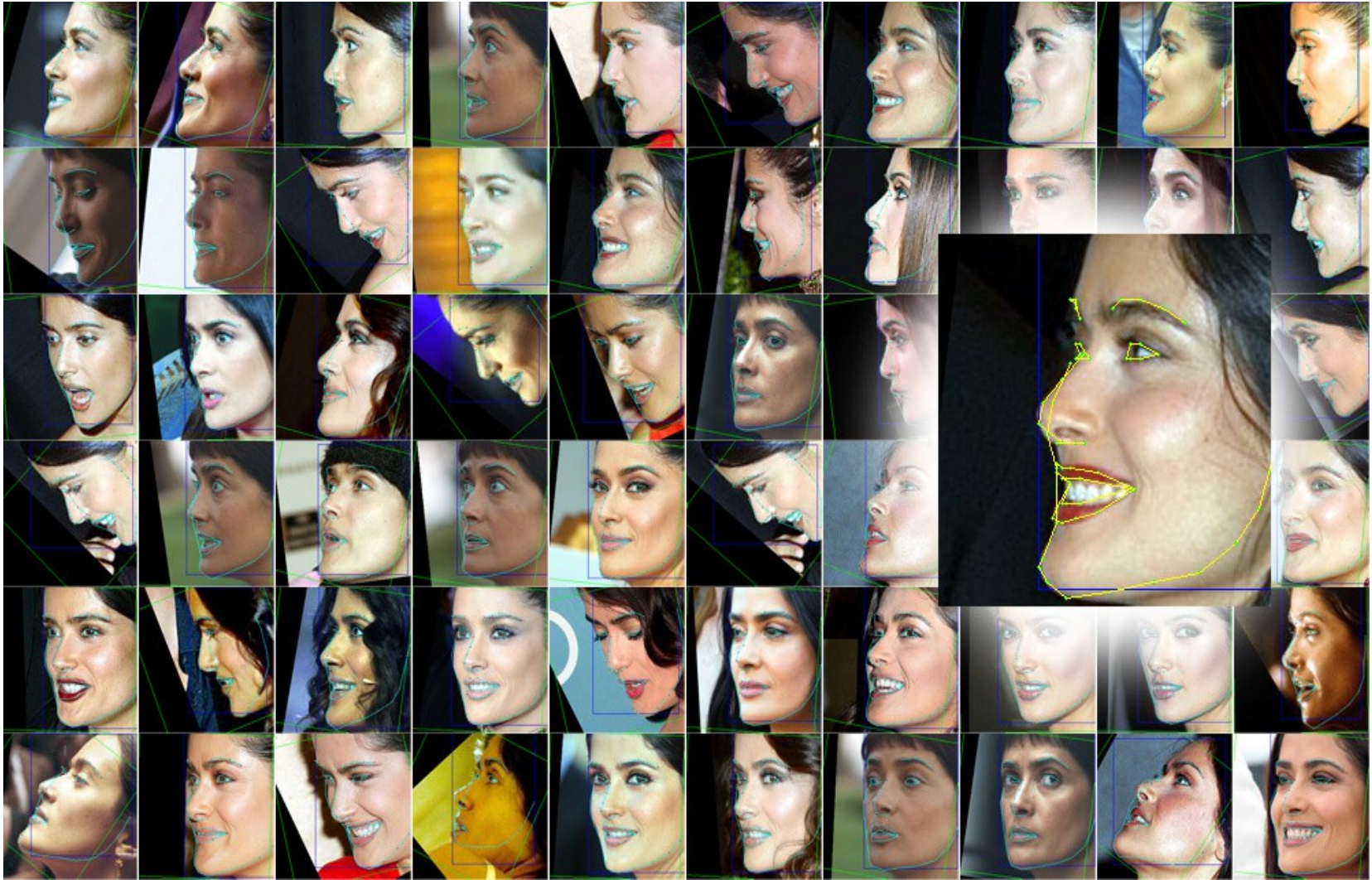
- **Mesh-Texture image**



An abstract graphic on the left side of the slide, composed of various shades of blue triangles and polygons of different sizes, creating a complex, crystalline structure.

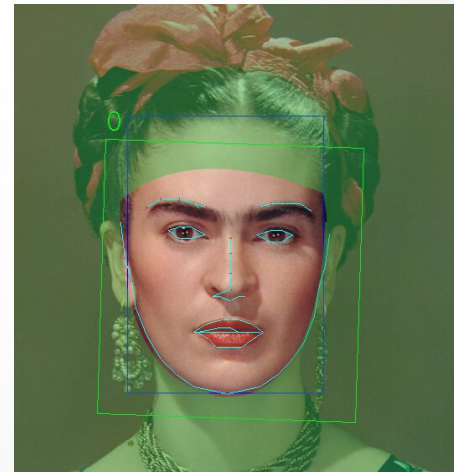
CGI mesh vs Deep Learning 'model'

- **Mesh - Texture image**
- **ML – source images**
- **Facial pose estimation**



CGI mesh vs Deep Learning 'model'

- **Mesh - Texture image**
- **ML – source images**
- **Facial pose estimation**
- **Mask**



An abstract graphic on the left side of the slide, composed of various shades of blue triangles and polygons of different sizes, creating a complex, crystalline structure.

CGI mesh vs Deep Learning 'model'

- **Mesh - Texture image**
- **ML – source images**
- **Facial pose estimation**
- **Mask**
- **'Ground truth'**
- **Domain transfer**



Hollywood upstaged

- **Superman's mustache**





Hollywood upstaged

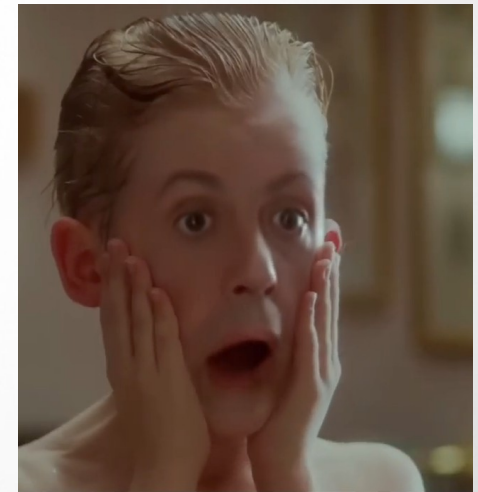
- **Superman's mustache**
- **Young Leia**





Hollywood upstaged

- **Superman's mustache**
- **Young Leia**
- **Irishman**





Road ahead



Future

- **(Reluctant) Adoption**
- **Lack of control**
- **Investments**
- **Changing old CGI pipe lines**
- **Re-skilling**
- **Nvidea - GPU**



SOURCES

<https://rossdawson.com/futurist/implications-of-ai/comprehensive-guide-ai-artificial-intelligence-visual-effects-vfx/>

