Images, Creativity, Tech(x2)

Existing technologies and techniques can inspire creativity in the making of new images, and the desire to create a certain image in a certain way can inspire new technologies or techniques.

- Has any type of image creation not required some form of technology to be used in its creation?
- A technology used to create an image could have already been available for other reasons, or could it have been invented specifically to support image creation.
- How do techniques of using technologies fit into this?
Everything was new at some point…
Pencils, paints, photographs on glass, film, sensors and screens, etc. were all new when they were first created, and possibly seen as strange or fancy or impressive or out of reach to certain individuals at some point.

Society
As technologies and techniques expand, it has an impact on individuals and society.

– Who has access to see the images.
  • Need access to a rich person’s home? to a museum? to the Internet?
– Who has the ability to own the images.
  • Cost of a painting? a drawing? a print? a monitor?
– How people interpret the images?
  • What is truth?
Fake Photos!
When paintings and drawings were the medium, everyone knew (or should have known) that the image presented might not reflect reality, but what about when photographs came into being?

- Manipulation in photographs is far from a new thing. From “expected” (like adjusting the exposure to make things look as they had been) to likely irrelevant (like a thumb being “removed” from the corner in “Migrant Mother”) to huge (like a person being removed from a photograph of people with Joseph Stalin) to “PR” (like a costly watch being removed from a bishop’s wrist).

Telling a “true” image from a “fake”?
With technologies and techniques that can be used for creating “fake images” we might need technologies and techniques for detecting them!

- Google Image Search, TinEye, etc. (can be used to search to see whether a tweeted image has been repurposed or altered).
- Exif data stored within certain images (can be used to discover creation date, editing software, etc).
- Forensic tools for detecting unusual patterns… Be an image detective at fotoforensics.com/messages.php?challenge=1
Computer-Generated Images

CGI dates back to at least the 1960s, and were commonly used to build animations. Within this, distinction should be made between computers being used to create characters by…

– supporting humans “rotoscoping” over motion actors
– using motion capture data to create them
– generating them from digital models and key frames/points

Today photorealistic faces are being generated based on sampled and mathematical models…
Computers actually drawing/painting…

There are many variations in the area of what falls into the world of “artificial intelligence” (deep learning, generative/genetic algorithms, neural nets, etc.) and image creation. Try [www.kapwing.com/cartoonify](http://www.kapwing.com/cartoonify)

- Image processing and recognition can be used to transform photographs or sensor data into drawing information, to then be used to either digitally or physically (via robotics) create the art.

- AI systems can be set to work against each other, trying to generate convincing fakes on one side and working to detect them on the other, until a point is reached where the trickster creates something that a good detector will claim is real.
**XR Content Creation**

360° (2D or 3D)
- Multiple fisheye lenses with overlapping fields of view for creating a 360° sphere.
- Matched pairs of lenses/sensors for 3D via two offset 360° spheres.
- Vuze, Ricoh Theta, Nikon KeyMission360, etc.

3D/Depth
- LiDAR and other laser-scanning special-purpose devices.
- Photogrammetry-based, where you use a regular camera to take photographs around an object to reconstruct its geometry.

**Lenses and Sensors**

Thermographic/Thermal Imaging
- Infrared radiation used to gather heat information, software to transform to false-color images, and possibly combine with traditional images.
- FLIR, Seek, etc.

Plenoptic (light-field) Cameras
- Math and physics combine to capture depth, both in and out of focus image data (with the possibility of choosing a focal plane after the fact).

Try [https://ter.ps/lytro](https://ter.ps/lytro)
Some Resources

- https://computerstories.net/a-computer-generated-imagery-cgi-history-698
- http://cinefex.com/blog/inspiring-mpc/
- https://github.com/danmacnish/cartoonify
- http://harvey-moon.com/search/machine
- http://www.cloudpainter.com/
- https://www.engadget.com/2012/09/28/ibis-hotels-to-have-robots-paint-art-while-they-track-your-sleep/
- https://www.cyark.org/