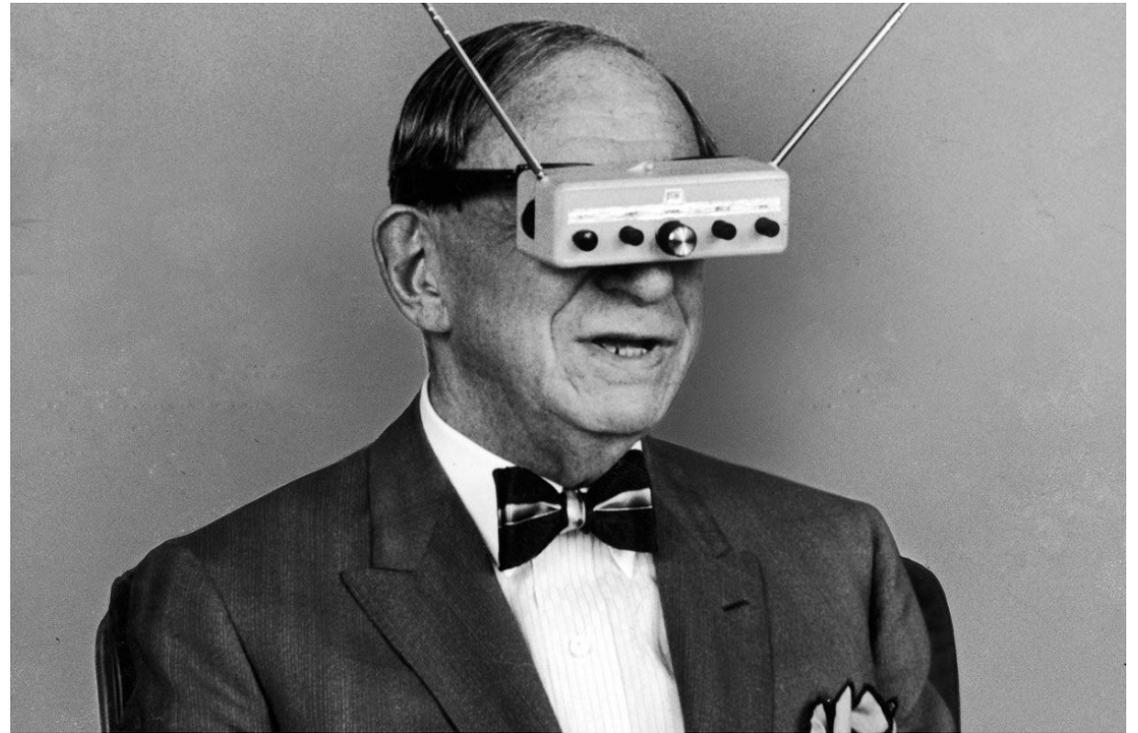


DEEPPFAKES + MIXED REALITY #FAKEREALITY?

Jeanine Reutemann
Research Fellow; Digital Media Designer; Lecturer



«Photography is truth. The cinema is truth twenty-four times per second»

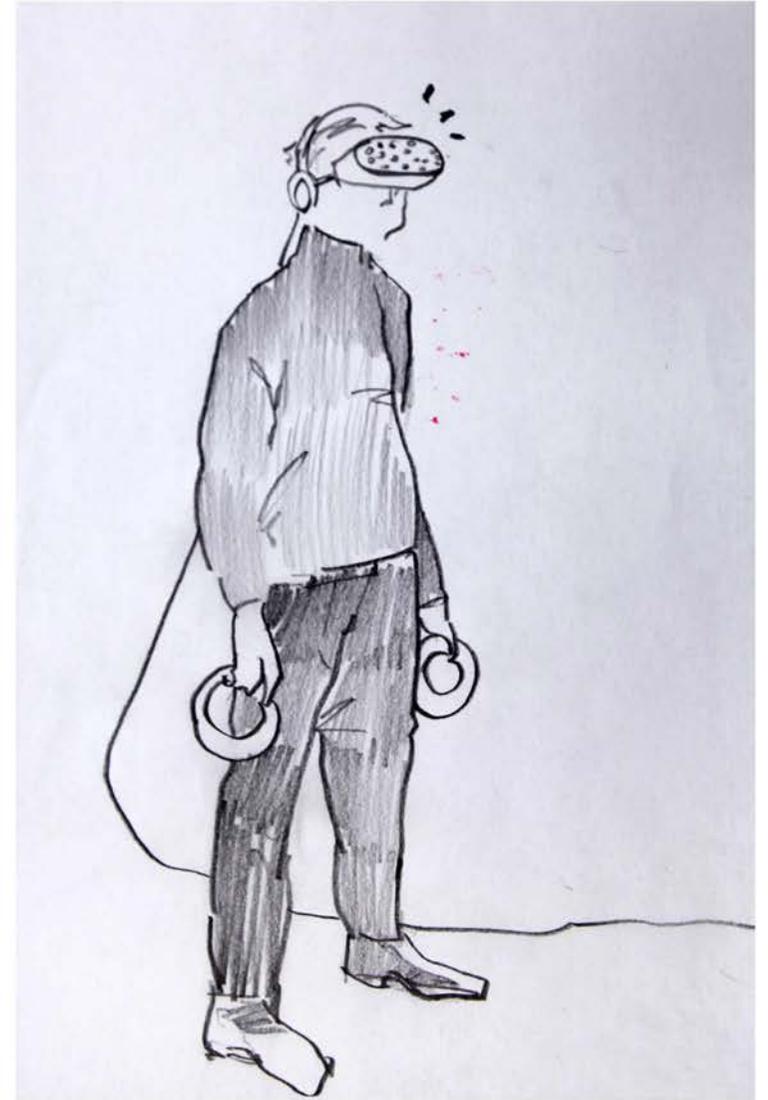
JEAN-LUC GODARD, 1960.

«Photography is truth. The cinema is truth twenty-four times per second»

JEAN-LUC GODARD, 1960.

**So what about 360-Virtual Reality,
at 120 frames per second?**

paradim ***SHIFT?***





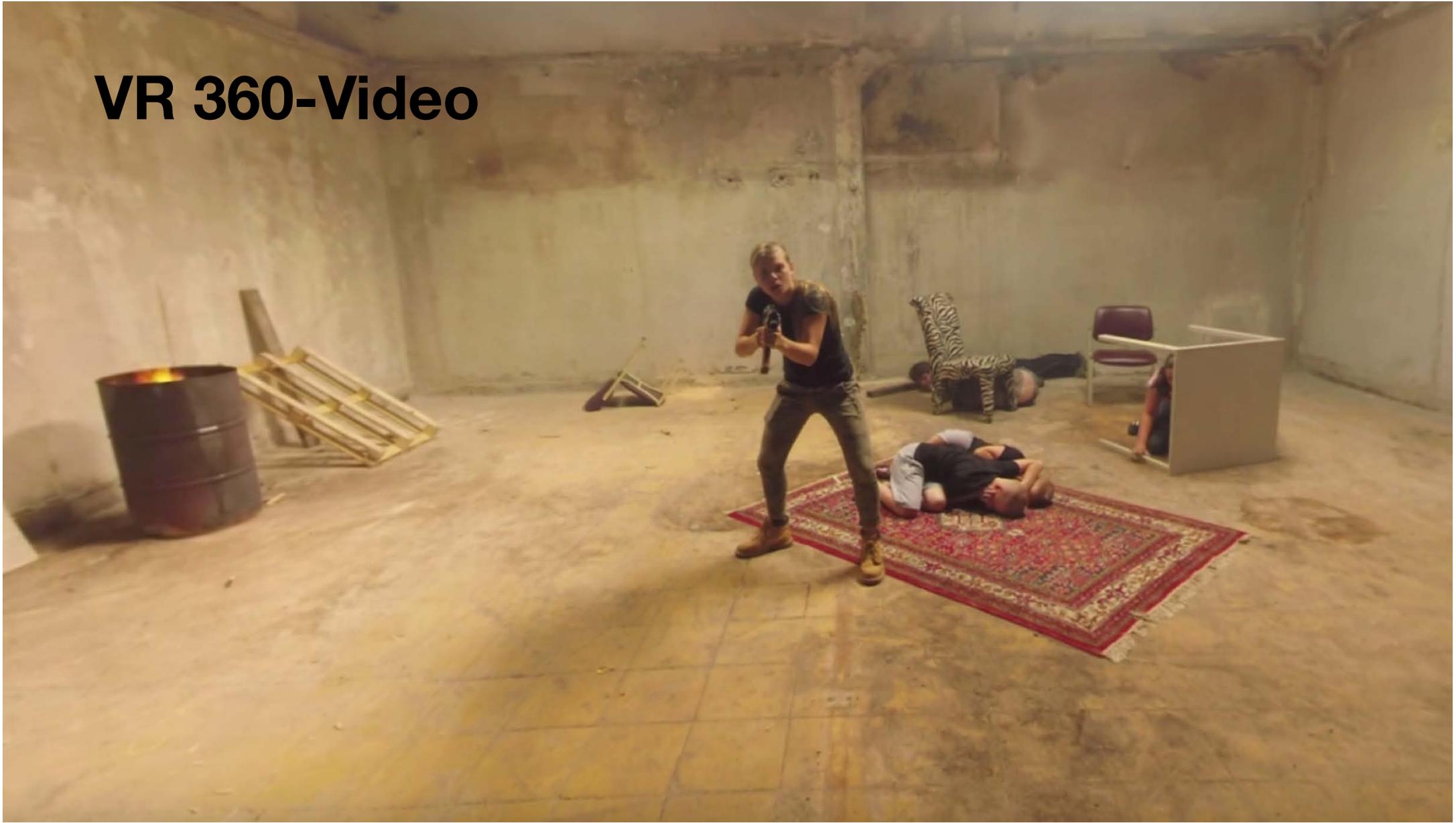
1968; Ivan Sutherland and Bob Sproull

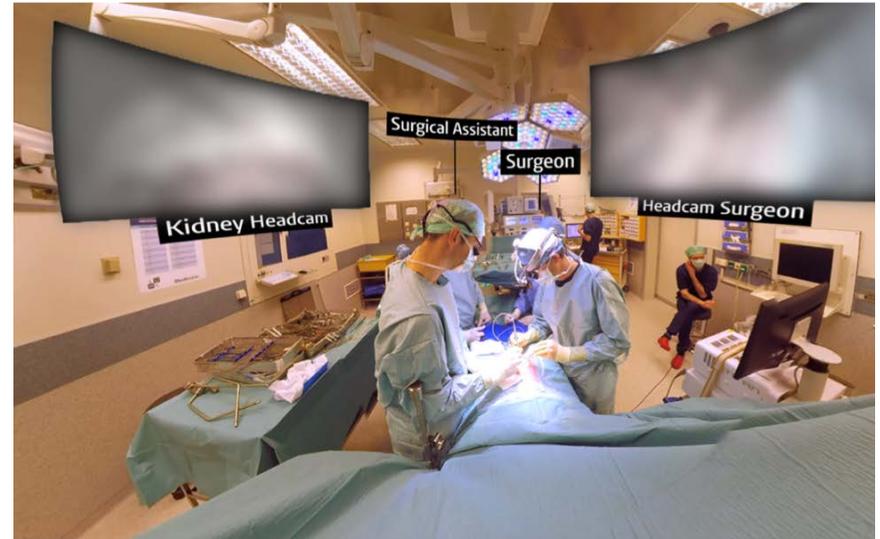
2003; Randy Pausch, Stanford University Classes



Clouds Over Sidra

VR 360-Video





CENTER FOR
INNOVATION
IN TELECARE



University of
London





360-Virtual Reality

Immersive experiences

Sense of presence

Embodiment

360-Virtual Reality

Immersive experiences

Sense of presence

Embodiment

VIRTUAL

EMPATHY

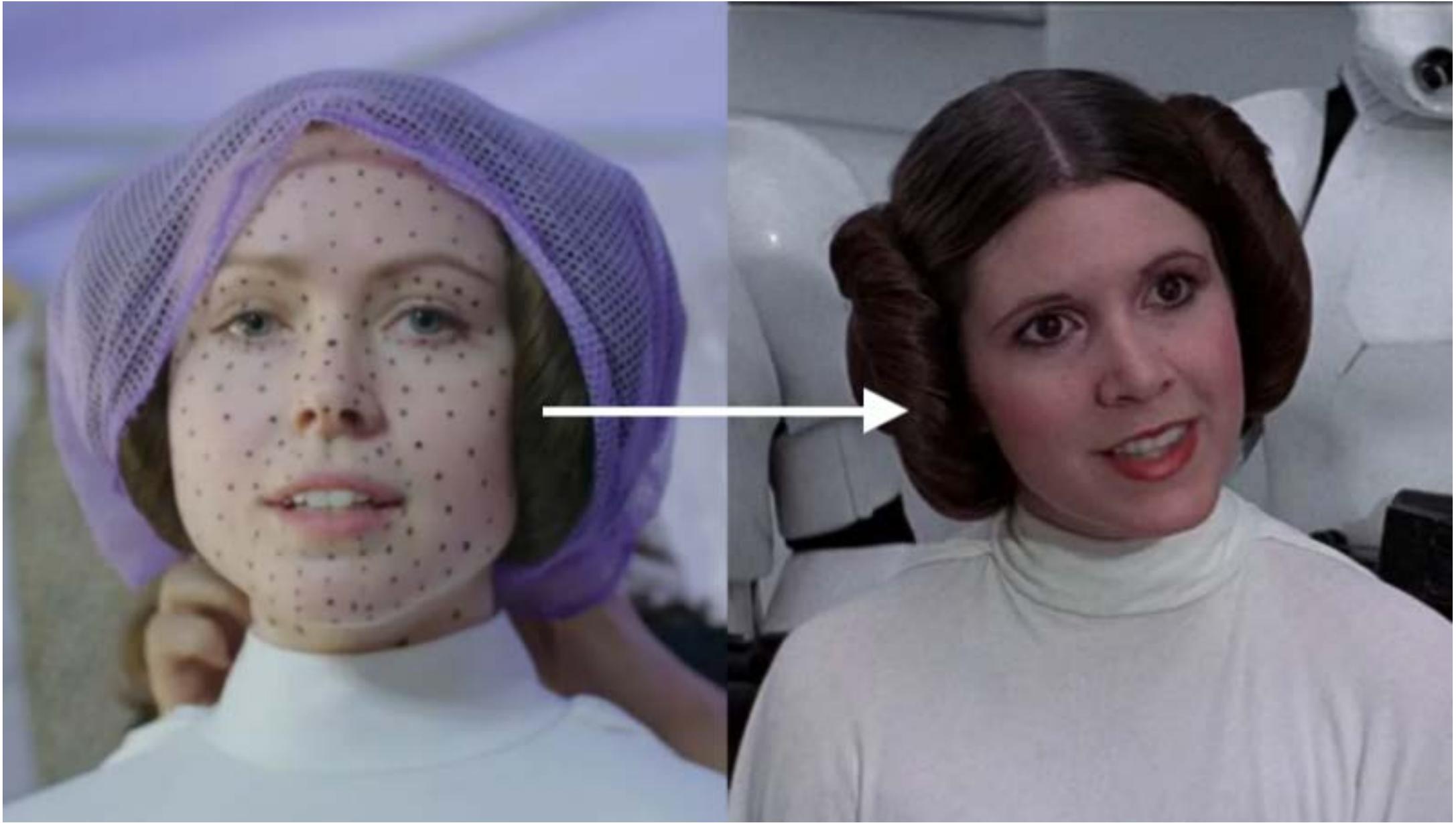
ELEMENTAL DEATH MENTAL HEALTH
IMPERIALISM VIOLENCE
FEMINISM MISUNDERSTANDING
NATURE NEUROSCIENCE COMBOGENESIS
NARRATIVE INTERMEDIARY FORMS
DARK SIDE *EXPLORING THE DIVERSITY OF* DIALOG
CONTROL **EMPATHY** ETHICS
IMAGINARY LOVE
EMOTIONAL EXCHANGE DIGITIZATION COMPASSION
DEAD DOGS VIDEO WORK
ENTANGLEMENT EPISTEMOLOGICAL TURN
POWER GENEALOGY GENDER NONHUMAN
ANIMALS MONSTROUS NURSE SUFFERING
TRANSNATIONAL

(FLAT) VIDEOS

VIDEO RECEPTION IN CAMBODIA

Information on Facebook and other social media is believed when:	Level of Trust						
	0%	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%	Don't know
It is posted by an individual I trust	0.1%	5.3%	12.8%	45.6%	20.2%	15.7%	0.2%
It is shared by an individual I trust	1.9%	9.3%	23.0%	44.8%	12.4%	7.9%	0.7%
It is posted by organization I trust	0.3%	3.0%	10.5%	32.8%	28.1%	24.9%	0.5%
It is shared by organization I trust	1.8%	8.4%	18.2%	43.8%	18.2%	9.0%	0.6%
It includes pictures	0.6%	8.1%	16.9%	37.1%	21.3%	15.9%	0.1%
It includes videos	0.5%	4.1%	11.6%	29.9%	24.1%	29.7%	0.1%
There are many likes/shares	1.6%	4.7%	12.4%	32.0%	26.1%	22.5%	0.8%
It is from a Cambodian source	0.6%	4.4%	11.1%	34.1%	27.8%	21.8%	0.3%
It is from an international source	2.4%	9.9%	19.8%	33.1%	19.2%	13.0%	2.6%
It seems true or possibly true	2.6%	7.3%	15.1%	28.2%	24.2%	21.8%	0.8%

<https://asiafoundation.org/publication/mobile-phones-internet-use-cambodia-2016/>



Face2Face: Real-time Face Capture and Reenactment of RGB Videos

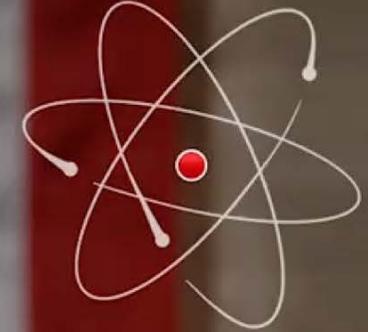
*Justus Thies¹, Michael Zollhöfer²,
Marc Stamminger¹, Christian Theobalt²,
Matthias Nießner³*

¹University of Erlangen-Nuremberg

²Max-Planck-Institute for Informatics

³Stanford University

CVPR 2016 (Oral)



TWO MINUTE PAPERS

WITH KÁROLY ZSOLNAI-FEHÉR (KZF)

AUDIO TO OBAMA: **LEARNING LIP SYNC FROM AUDIO**

Disclaimer: I was not part of this research project, I am merely providing commentary on this work.

Deepfakes

Audio-to-Audio

Text-to-Speech

Facial Recognition;

Geo-Tracking;

Digital Nudging

[...]

**In a few months from now,
we won't be able to distinguish
between deepfakes and 'normal'
videos.**

Are we?

ORIGINAL



DERPFAKES



★ THE PRESIDENT

★ THE PRESIDENT



YES & NO







zdf_neo

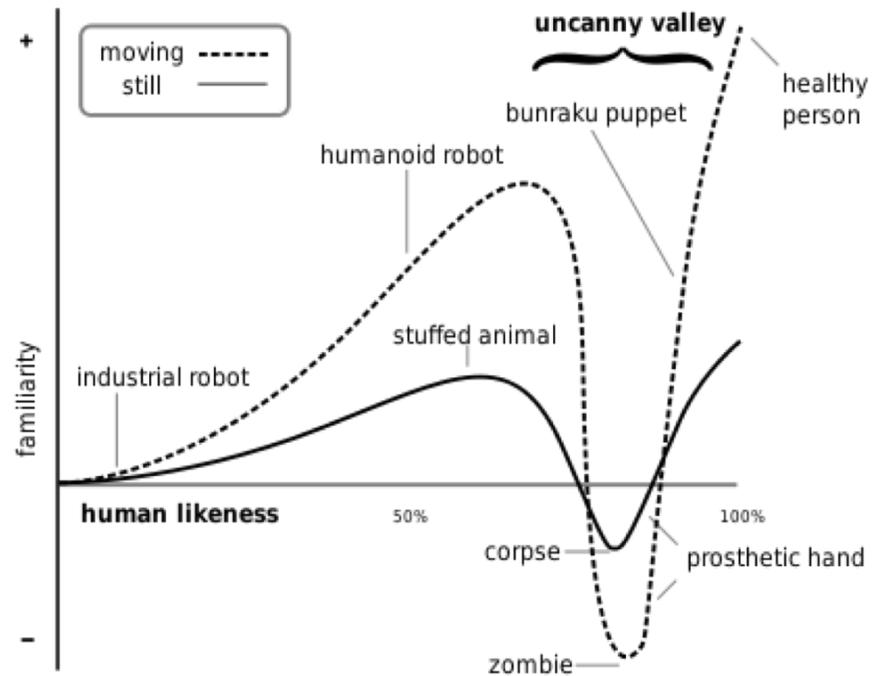
A Mergel B Mergel

rgba rgba.alpha RGB

overlays on, no animation

Y 1

Deepfakes: Uncanny Valley Effect



Continuous Race

VERIFICATION STRATEGIES?

«Amnesty International is already grappling with some of these issues. Its Citizen Evidence Lab verifies videos and images of alleged human-rights abuses. It uses Google Earth to examine background landscapes and to test whether a video or image was captured when and where it claims. It uses Wolfram Alpha, a search engine, to cross-reference historical weather conditions against those claimed in the video.»

Fake news: you ain't seen nothing yet,

<https://www.economist.com/news/science-and-technology/21724370-generating-convincing-audio-and-video-fake-events-fake-news-you-aint-seen>

VERIFICATION STRATEGIES?

Media: unique key that only the signing organisation—or the originating device—possesses.

VERIFICATION STRATEGIES?

Decentralized timestamping on the blockchain

**All of these idea
solutions will have
no impact on our
fakenews issue.**

CHANCES?

... No need for (boring) teaching videos anymore



CHANCES?

- ... No need for (boring) teaching videos anymore
- ... Gender swap in blockbuster movies



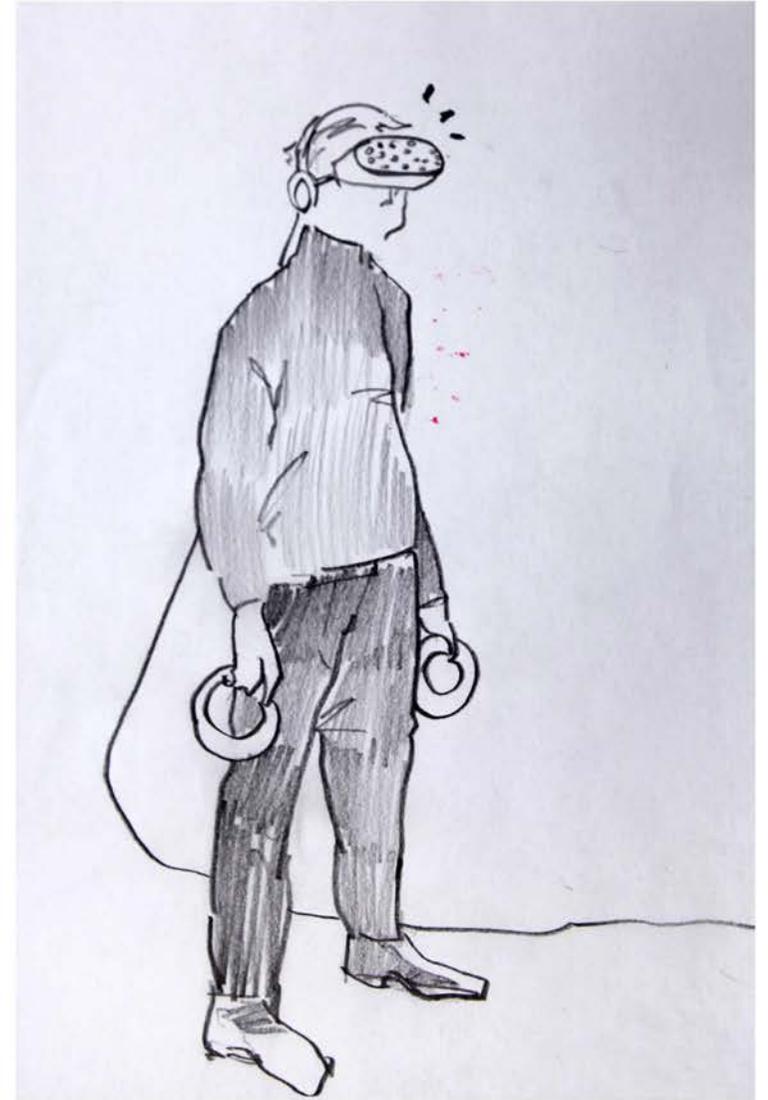
CHANCES?

- ... No need for (boring) teaching videos anymore
- ... Gender swap in blockbuster movies
- ... Selfie-issue 2.0 > the centre of all the stories?





paradim **SHIFT?**
FAKEREALITY
CRISIS?



WHAT CAN YOU DO PERSONALLY?

- 1. Check your sources**

WHAT CAN YOU DO PERSONALLY?

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- 2. Re-learn to watch videos precisely**

WHAT CAN YOU DO PERSONALLY?

- 1. Check your sources**
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- 3. Moving images are another language**

WHAT CAN YOU DO PERSONALLY?

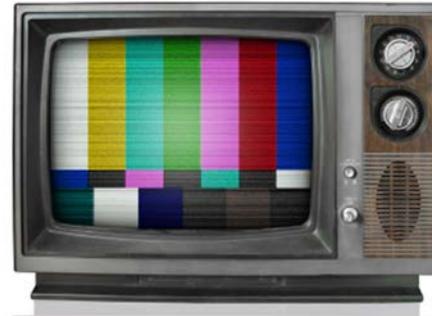
- 1. Check your sources**
- 2. Re-learn to watch videos precisely**
- 3. Moving images are another language**
- 4. Train your perception of people: decode facial expressions, gestures of speaker (watch & listen)**

WHAT CAN YOU DO PERSONALLY?

- 1. Check your sources**
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WHAT CAN YOU DO PERSONALLY?

- 1. Check your sources**
- 2. Re-learn to watch videos precisely**
- 3. Moving images are another language**
- 4. Train your perception of people: decode facial expressions, gestures of speaker (watch & listen)**
- 5. Raise awareness in your own community**



Jeanine Reutemann
Research Fellow; Digital Media Designer; Lecturer

slides on:
audiovisualresearch.org