DEEPFAKES + MIXED REALITY
#FAKEREALITY?

Jeanine Reutemann
Research Fellow; Digital Media Designer; Lecturer
«Photography is truth. The cinema is truth twenty-four times per second»

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So what about 360-Virtual Reality, at 120 frames per second?
paradigm **SHIFT?**
1968; Ivan Sutherland and Bob Sproull
VR 360-Video
360-Virtual Reality

Immersive experiences
Sense of presence
Embodiment
360-Virtual Reality

Immersive experiences
Sense of presence
Embodiment

VIRTUAL

EMPATHY
EXPLORING THE DIVERSITY OF EMPATHY
(FLAT) VIDEOS
## VIDEO RECEPTION IN CAMBODIA

<table>
<thead>
<tr>
<th>Information on Facebook and other social media is believed when:</th>
<th>Level of Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>It is posted by an individual I trust</td>
<td>0.1%</td>
</tr>
<tr>
<td>It is shared by an individual I trust</td>
<td>1.9%</td>
</tr>
<tr>
<td>It is posted by organization I trust</td>
<td>0.3%</td>
</tr>
<tr>
<td>It is shared by organization I trust</td>
<td>1.8%</td>
</tr>
<tr>
<td>It includes pictures</td>
<td>0.6%</td>
</tr>
<tr>
<td>It includes videos</td>
<td>0.5%</td>
</tr>
<tr>
<td>There are many likes/shares</td>
<td>1.6%</td>
</tr>
<tr>
<td>It is from a Cambodian source</td>
<td>0.6%</td>
</tr>
<tr>
<td>It is from an international source</td>
<td>2.4%</td>
</tr>
<tr>
<td>It seems true or possibly true</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

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)
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?
YES & NO
Deepfakes: Uncanny Valley Effect

![Graph illustrating the Uncanny Valley Effect with examples of human likeness and familiarity.](image)
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,
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?
paradigm \textit{SHIFT}\textsuperscript{?}
FAKEREALITY
CRISIS\textsuperscript{?}
WHAT CAN YOU DO PERSONALLY?

1. Check your sources
WHAT CAN YOU DO PERSONALLY?

1. Check your sources
2. Re-learn to watch videos precisely
WHAT CAN YOU DO PERSONALLY?

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3. Moving images are another language
WHAT CAN YOU DO PERSONALLY?

1. Check your sources
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4. Train your perception of people: decode facial expressions, gestures of speaker (watch & listen)
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1. Check your sources
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4. Train your perception of people: decode facial expressions, gestures of speaker (watch & listen)
5. Raise awareness in your own community
Jeanine Reutemann
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slides on:
audiovisualresearch.org