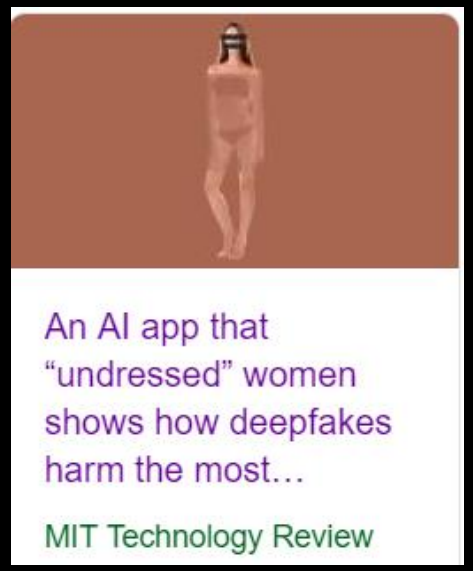
How to create and detect DeepFakes?
DutchGuild

Sezer Karaoglu

What is the dark side of AI?

Bosstown Dynamics

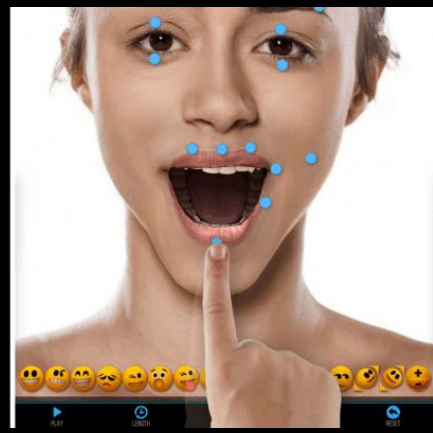
Nothing new but never this easy



DeepNude

FakeApp

FaceApp



Muglife

3D
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Which images are fake?

Which images are fake?

Human success is almost random

Lets do a test

https://deepfact.3duniversum.com/quiz

Face Replacement

GAN

Visual Only

FaceSwap
(Kowalski, 2016)

Face2Face (Thies
et al. 2016)

FakeApp
(2017)

Deep Video Portraits
(Kim et al. 2018)

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DeepFake

Audio Visual

Synthesizing Obama
(Suwajakorn, 2017)

Text-based Editing of
Talking-head Video
(Fried et al. 2019)

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DeepFake

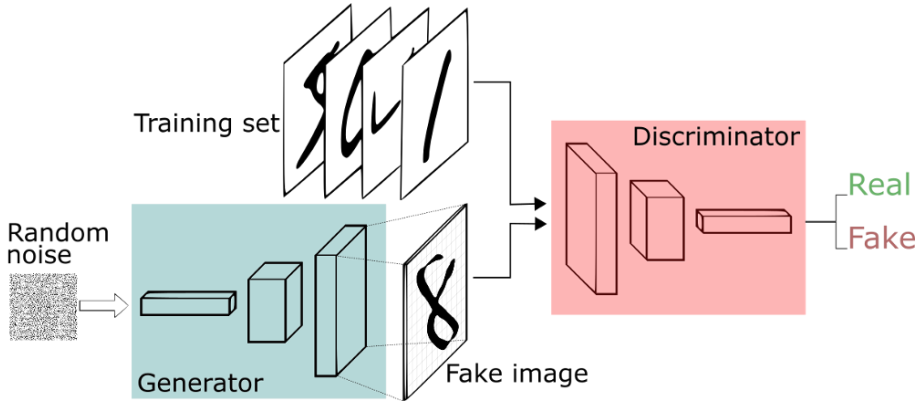
Visual quality improves significantly

StarGAN (2017)

PGGAN (2018)

Glow (2018)

StyleGAN (2019)

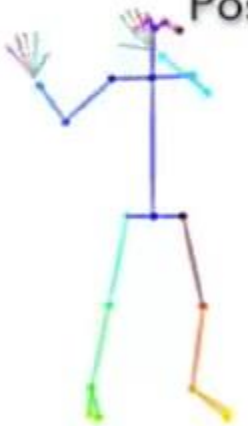


Merging attributes of faces

3DU Fake Videos – Combines Both Techniques

Source Video

Detected Pose



Source to Target Result

Why to worry about deepfakes?

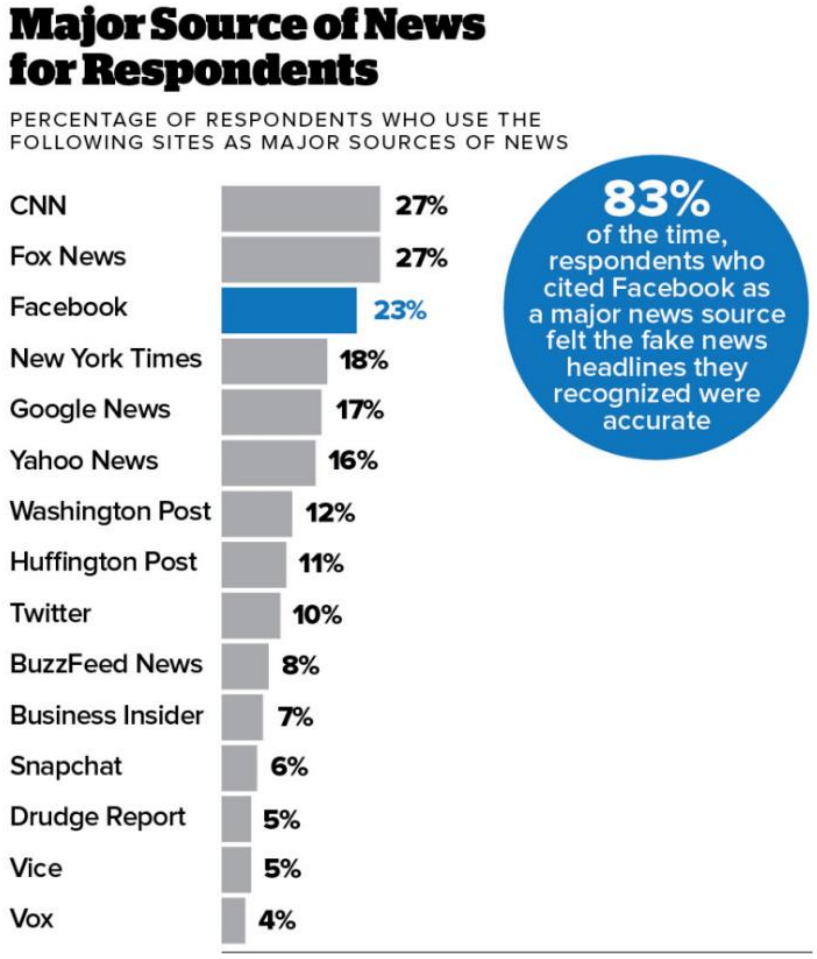
Dutch people are the least concerned about fake news among other 38 countries

Source: Media Authority and Reuters Digital News Report.

Confidence in news in general has fallen somewhat: 53 percent trust the news, in contrast to 59 percent in 2018.

Confidence in news on social media is low, but paper newspapers, television news and online news brands are considered very reliable.

NOS News is seen by respondents as the most reliable and receives an average score of 7.75 from users.



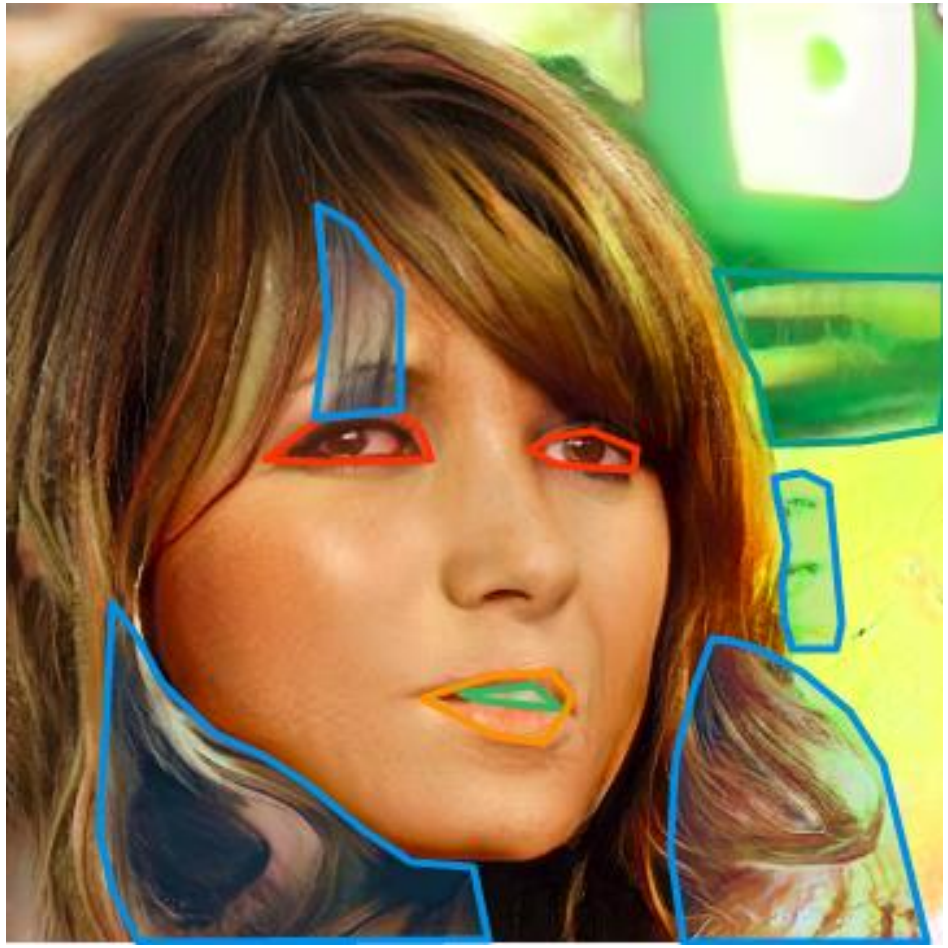
Source: Buzzfeed

Of the people surveyed, nearly 33% recalled seeing at least one of a selection of fake news headlines from the election.

How to spot deepfakes?

Common Visible Artifacts

- Unrealistic hair
- Blurred teeth
- Inconsistent eyes (different eye colors, shapes)
- Inconsistent skin tone
- Incorrect accessoires (glasses, earings)
- Unrealistic background
- Sharp edges across face or nose
- Parts of face that are incorrect (e.g. eyebrows, lips)

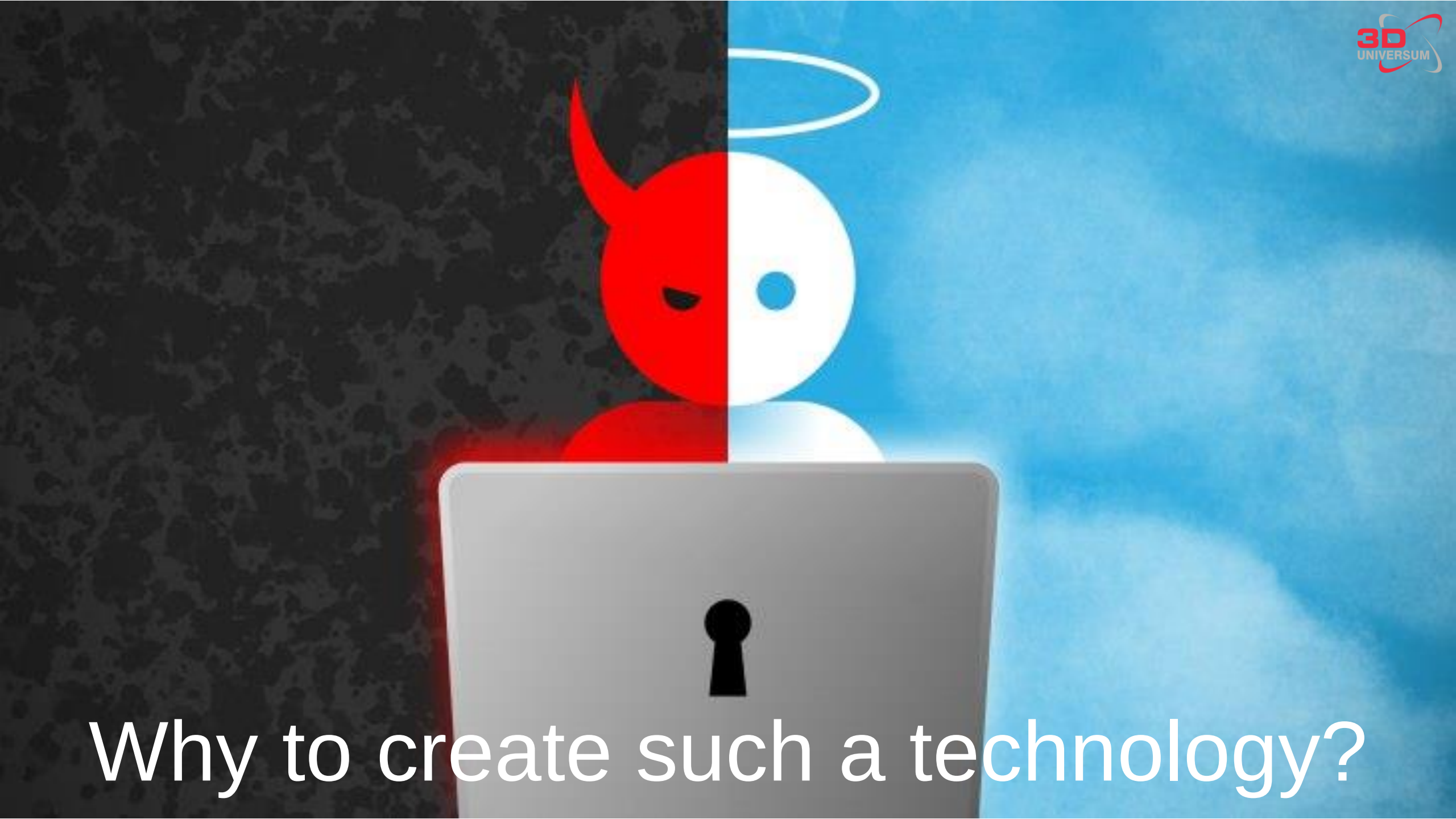


Source: 3DUniversum

The First DeepFake Detection Web Plug-in

Try it here!

http://deepfact.3duniversum.com/



Why to create such a technology?

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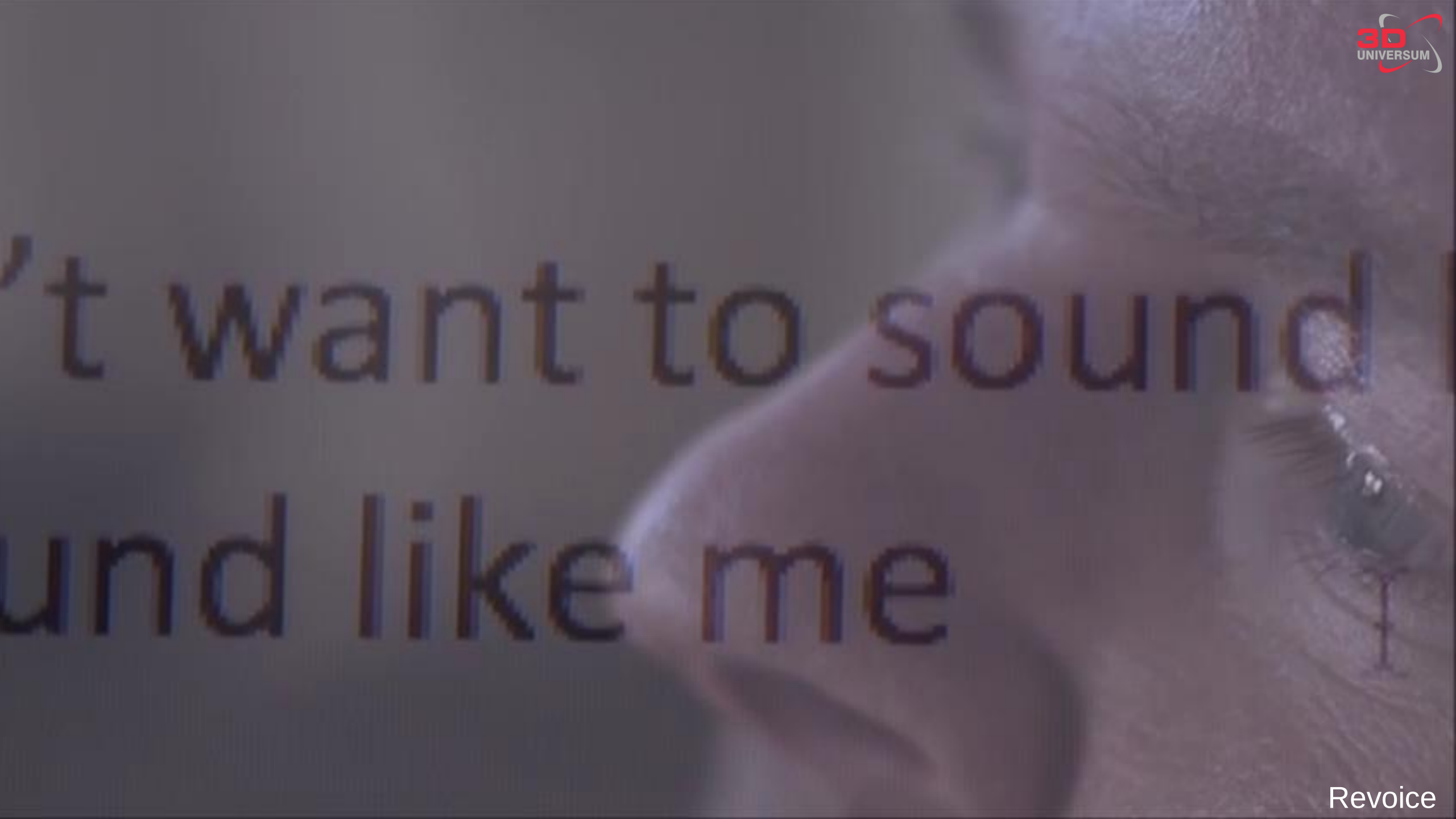

Revoice

Deep Empathy

Living portraits

Samsun AI Research: few-shot adversarial learning

See it but do not believe it

Thank You

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