Alyssa

MILLER

Losing Our Reality

Deepfakes Changing the Face of Attacks

Hacker/Researcher

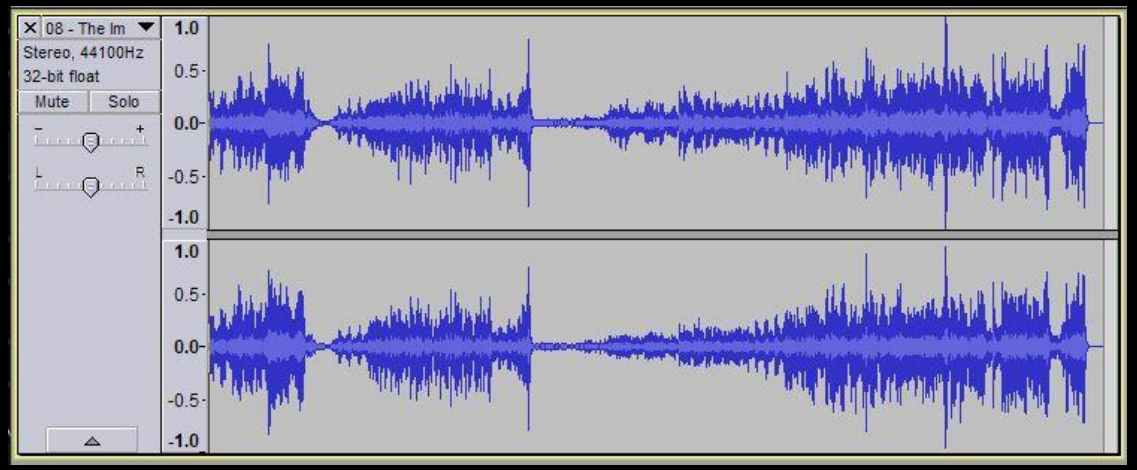
Security Advocate

Author & Blogger

Co-Host: Uncommon Journey

snyk

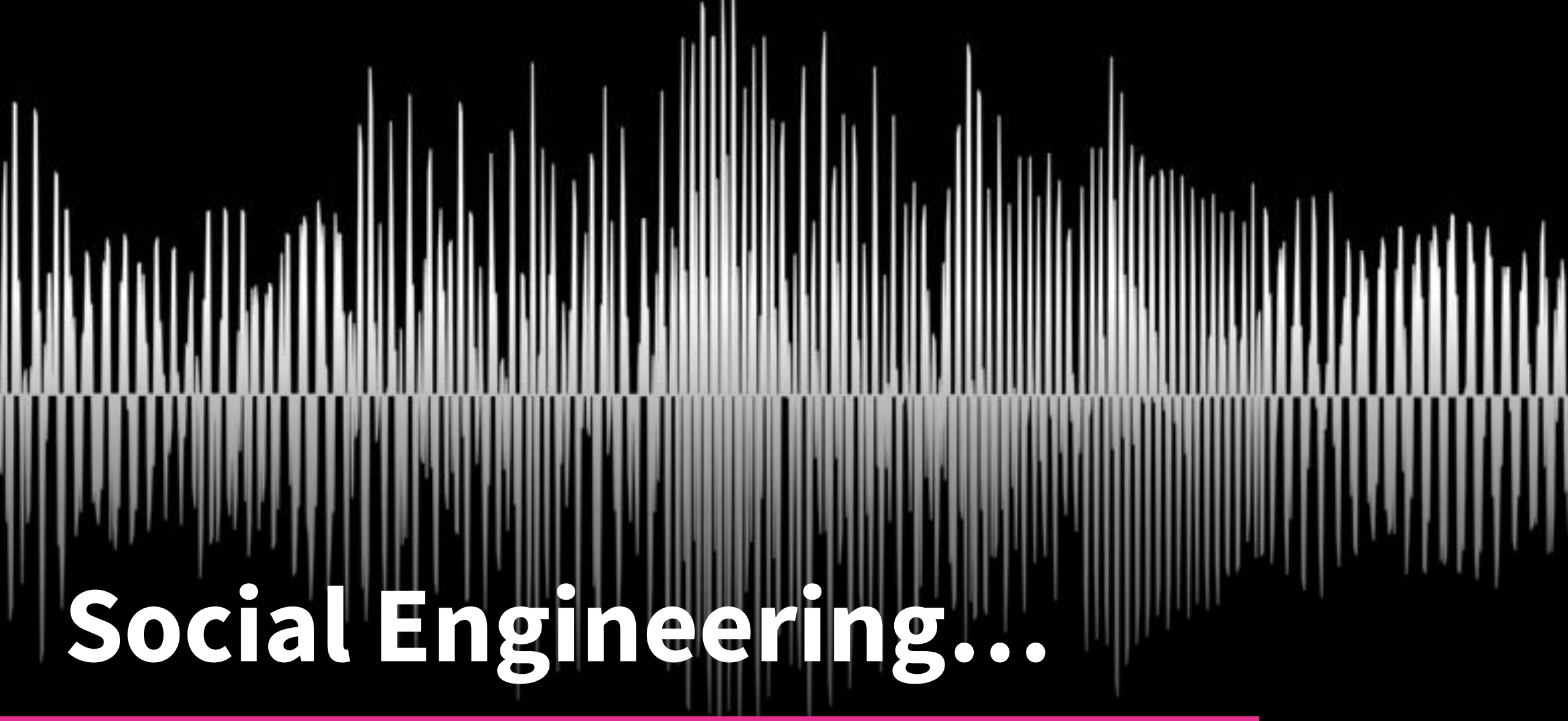
Deep Fakes...


08 - The Im
Stereo, 44100Hz
32-bit float
Mute
Solo
1.0
0.5
0.0
-0.5
-1.0

GOLDEN GLOBE

Deepfake Beginnings…

Politics...



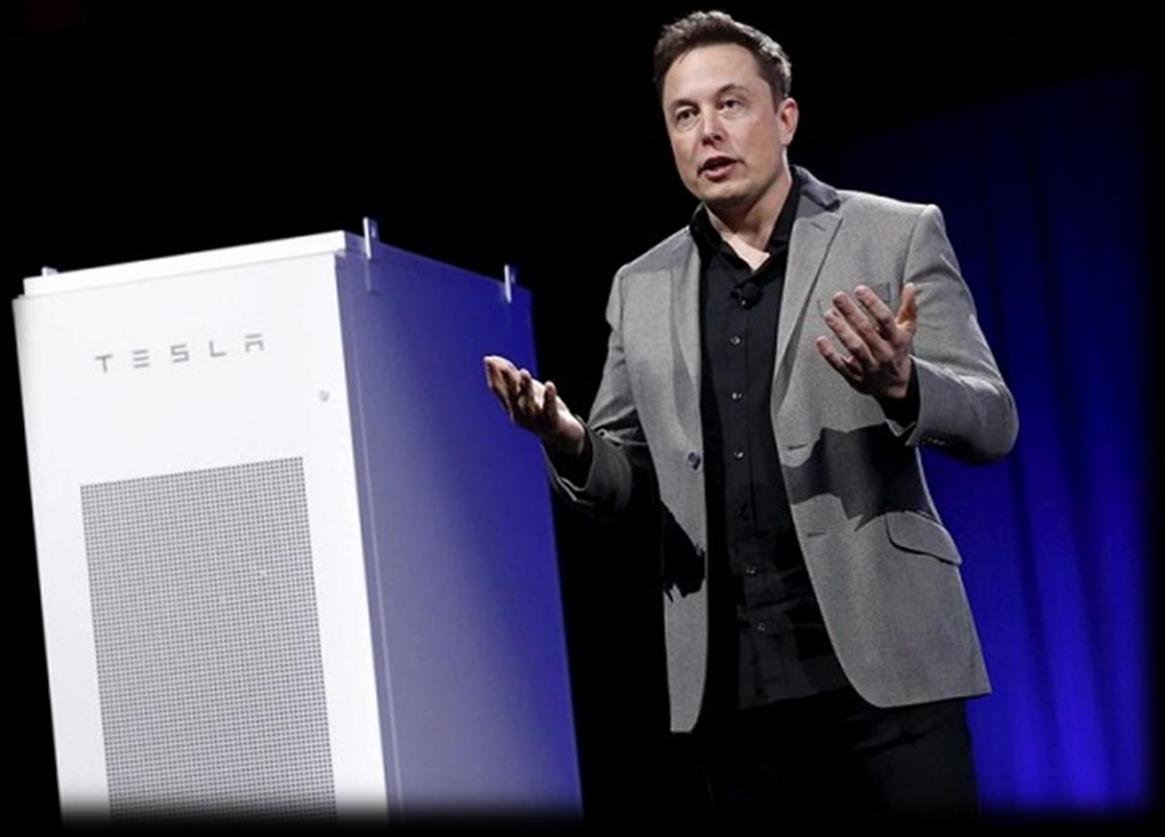
Social Engineering...

Revenge Porn...

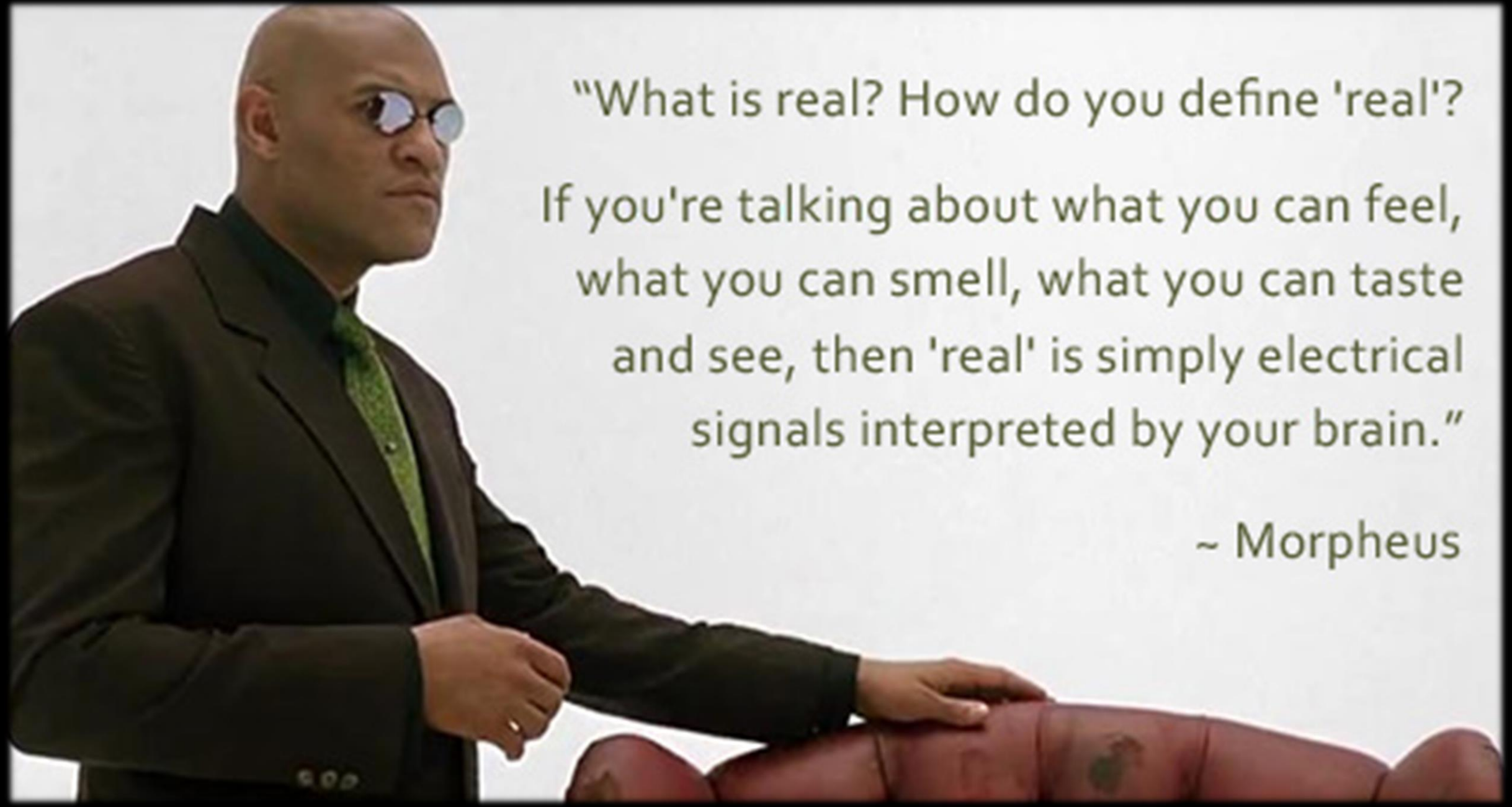
INSIDE HIS
$144
BILLION
SPLIT
ZOS' DIVORCE!
CHEATING
HOTOS
HAT
NDED
S MARRIAGE
HIS MISTRESS OF
8 MONTHS
REVEALED
OWNER OF
The Washington Post
ext sex & wild romps on his PRIVATE JET!
How he STOLE ANOTHER MOGUL'S WIFE!
PAGES OF EXCLUSIVE PHOTOS – WHAT REALLY HAPPENED

Extortion…

“Outsider” Trading…



Market Manipulation...


"What is real? How do you define 'real'?
If you're talking about what you can feel, what you can smell, what you can taste and see, then 'real' is simply electrical signals interpreted by your brain."
~ Morpheus

GANs...

Target Media

Generator

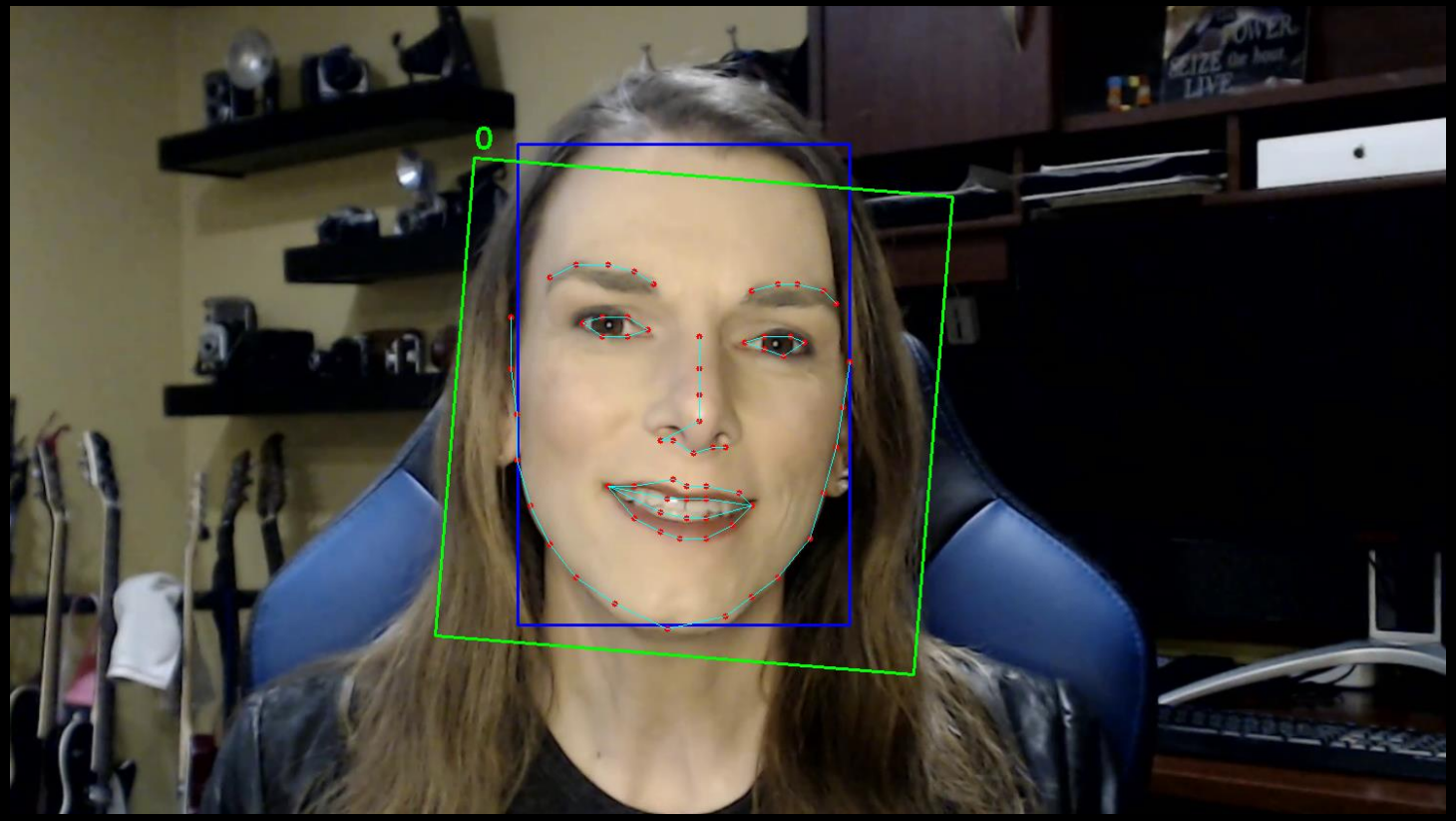
Training Set

Fake

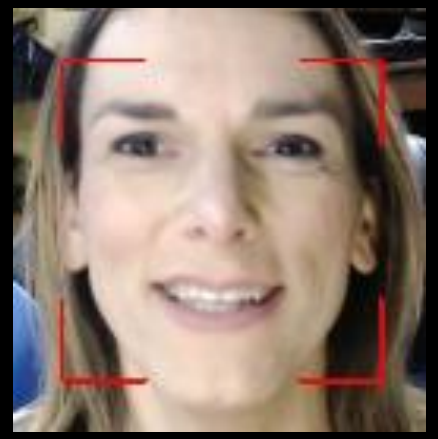
Discriminator

Real

Extract & Alignments...



1920x1080



254x254

A Deeper Look...

Encoder

Decoder

Loss

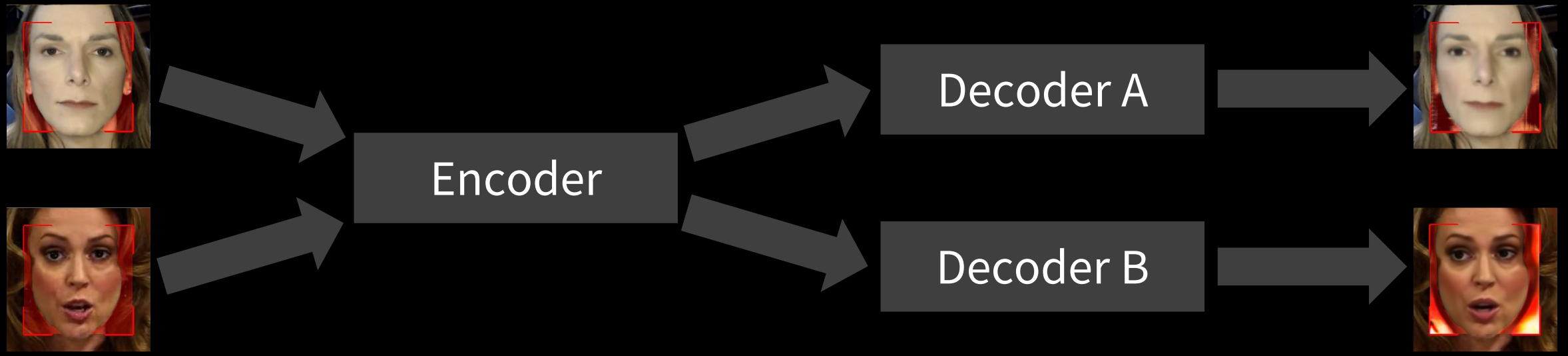
Discriminator

Weights

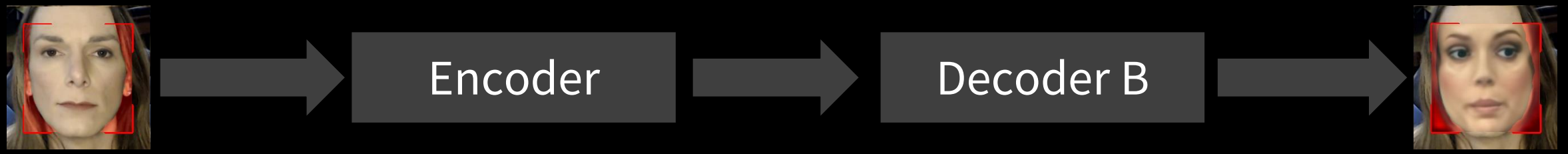
Model

Conversion Models...

Training

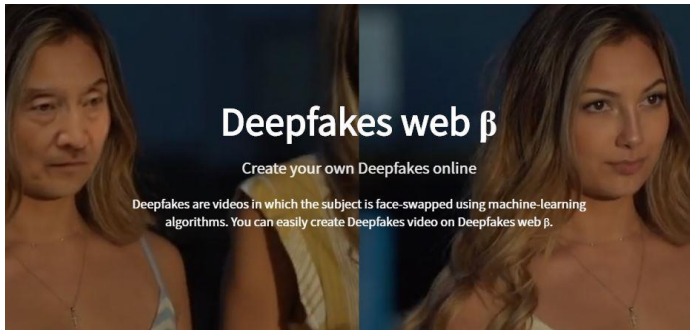


Convert



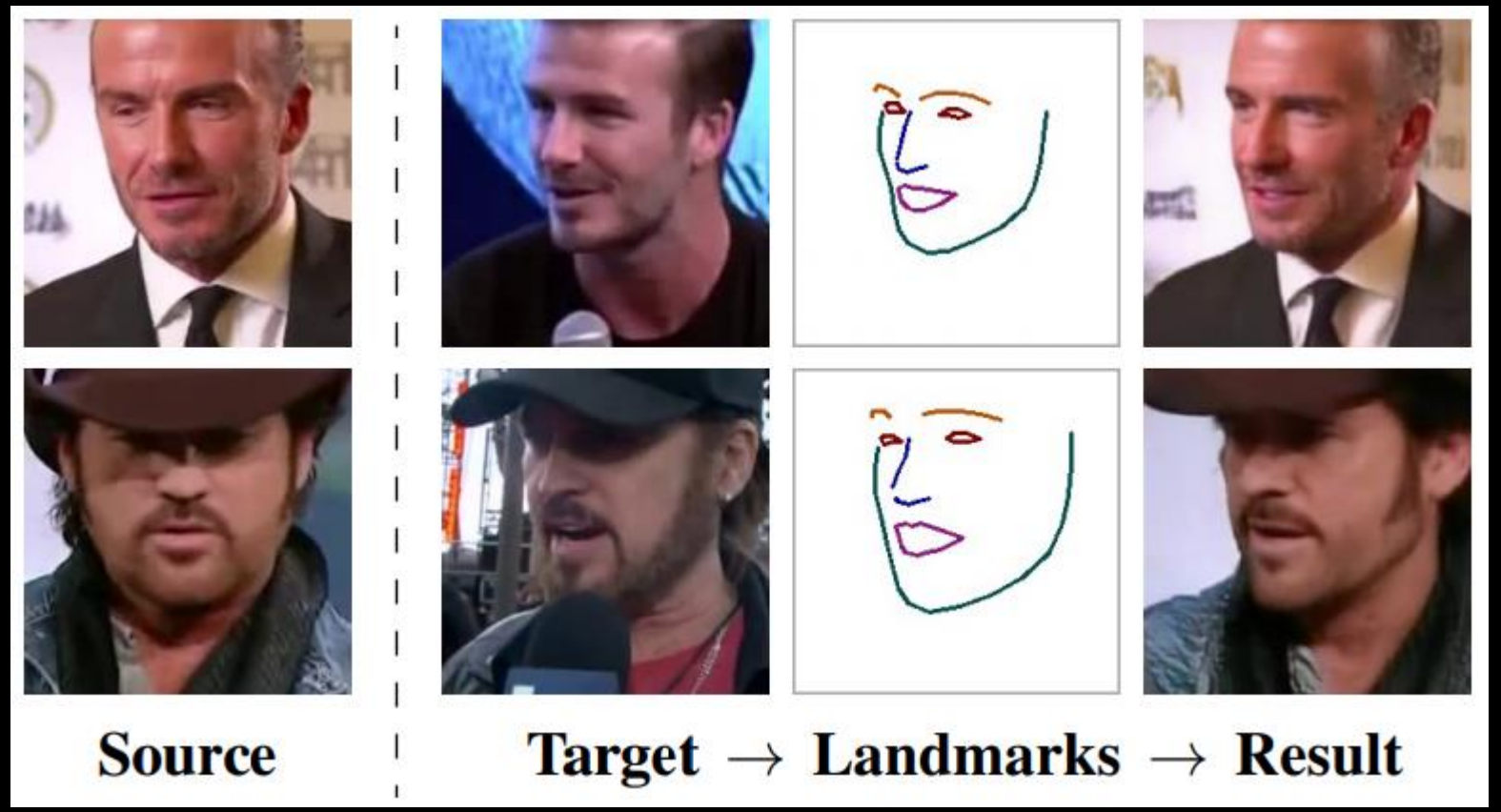
Consumer Deepfakes…

faceswap



DeepNude

Talking Heads...



REAL
FAKE

That Doesn’t Fit…

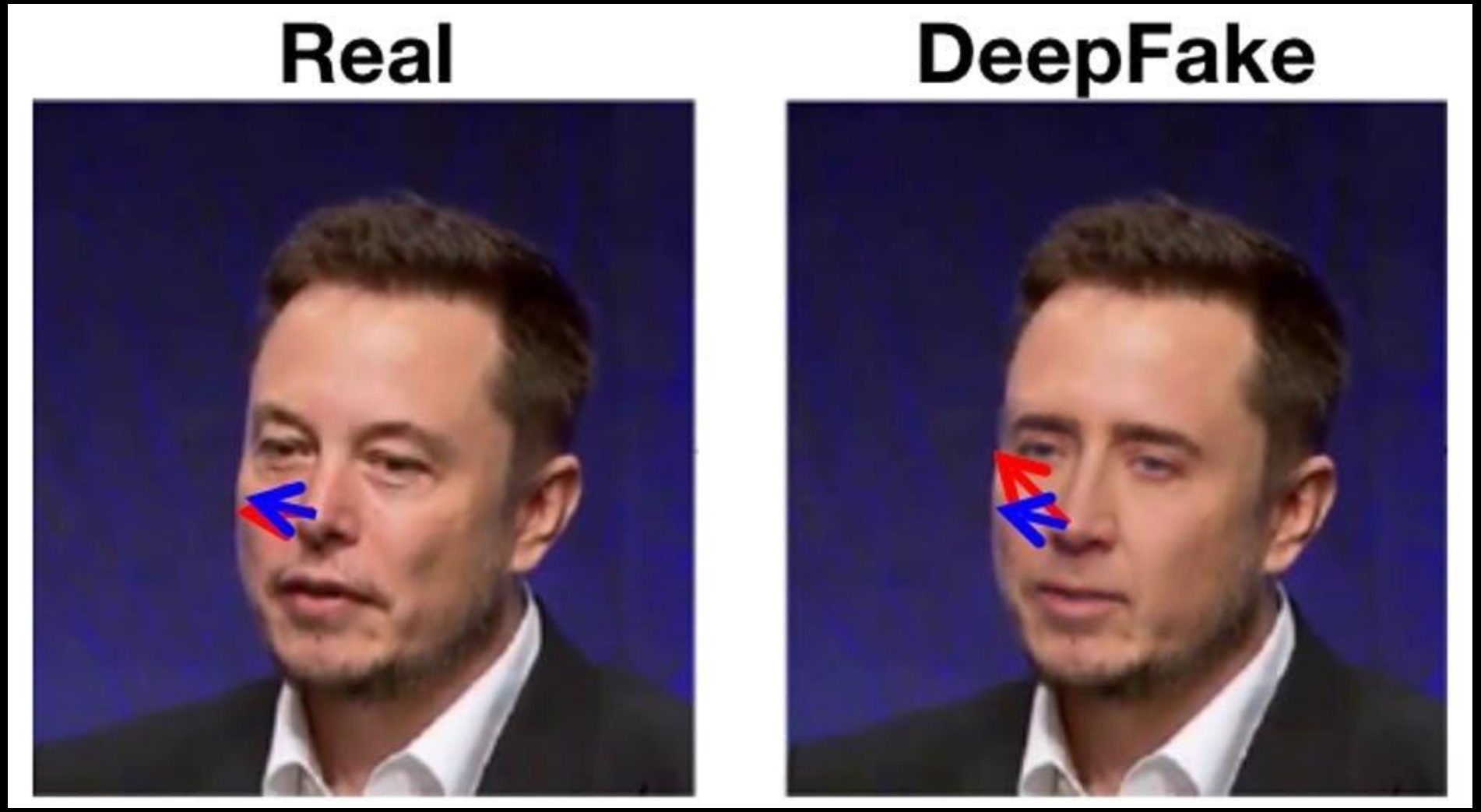


Image: Phys.org

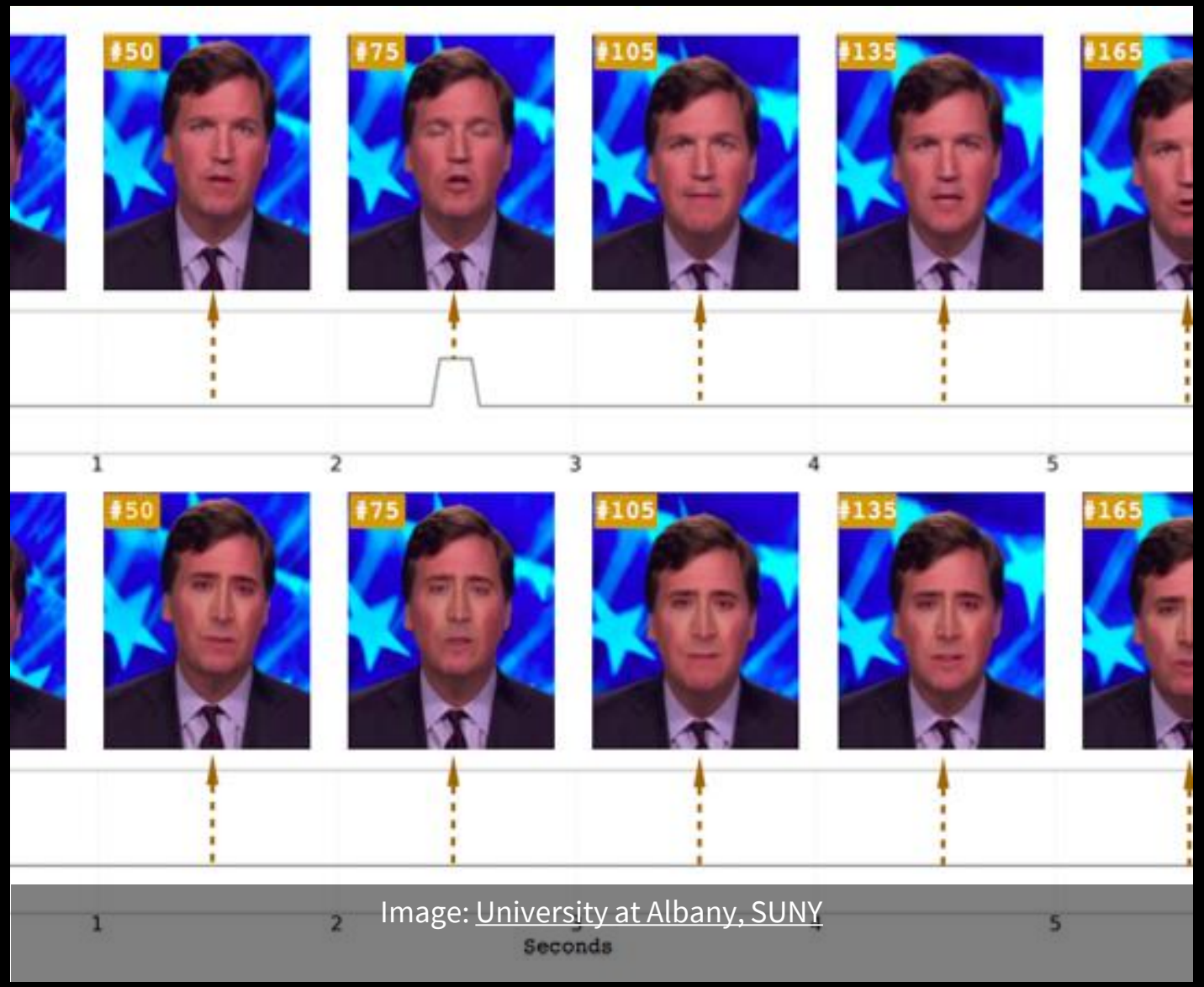


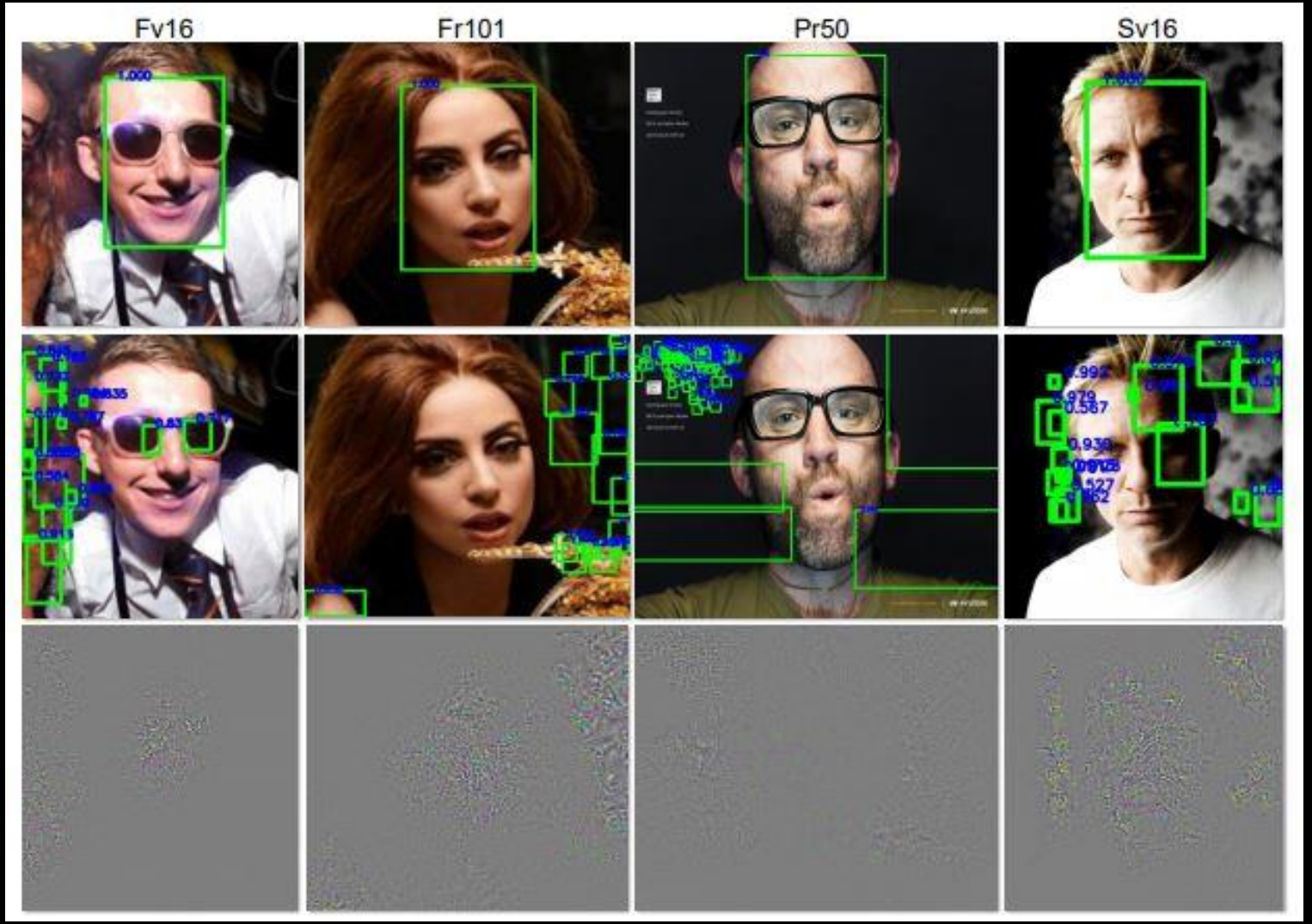
Image: University at Albany, SUNY

In The Blink of an Eye…

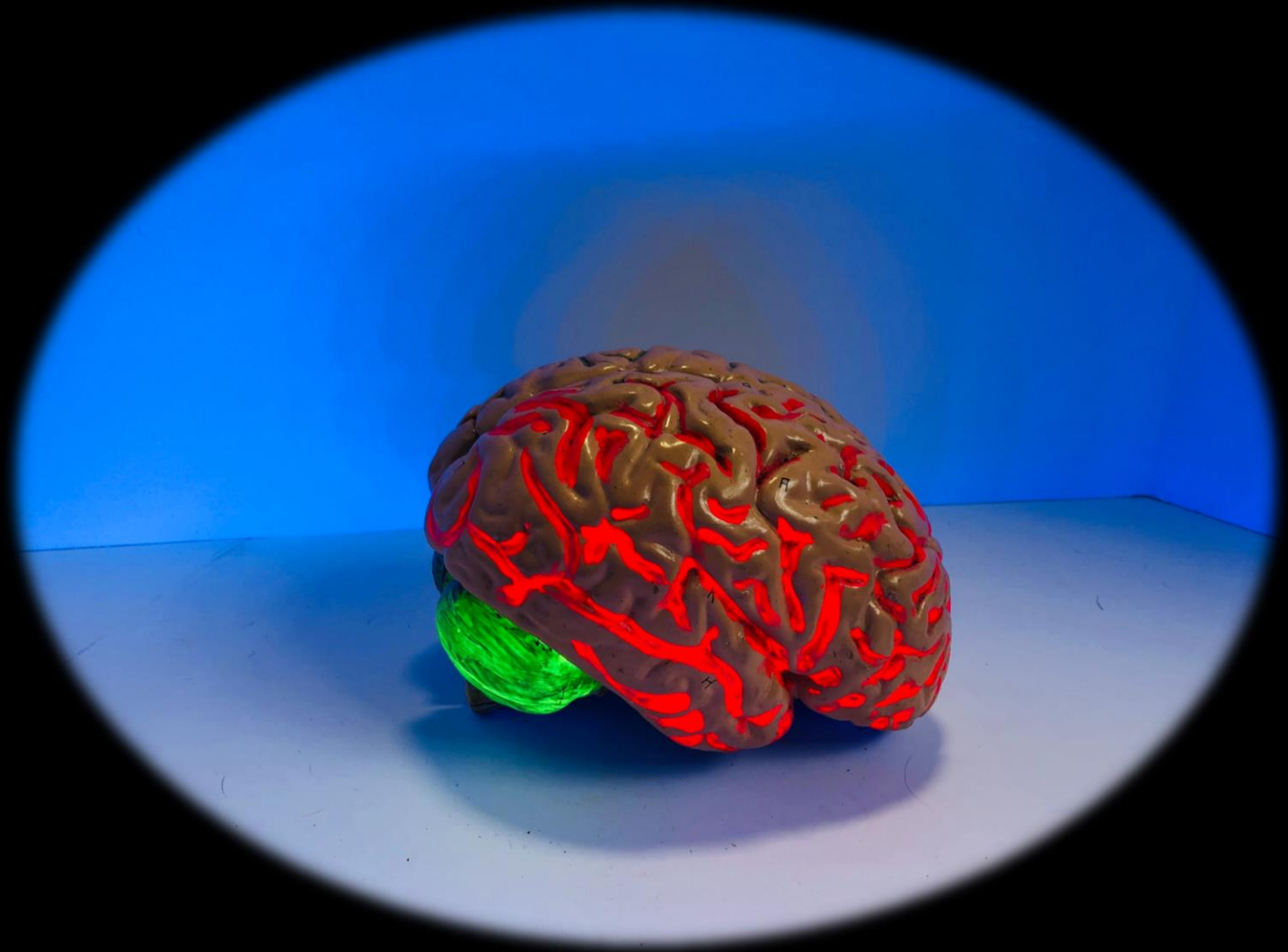
Warping Reality…

Modeling Behaviors…

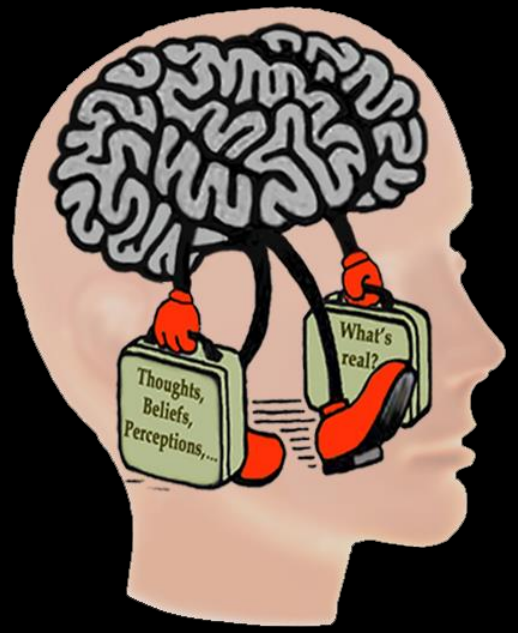
An Ounce of Prevention…

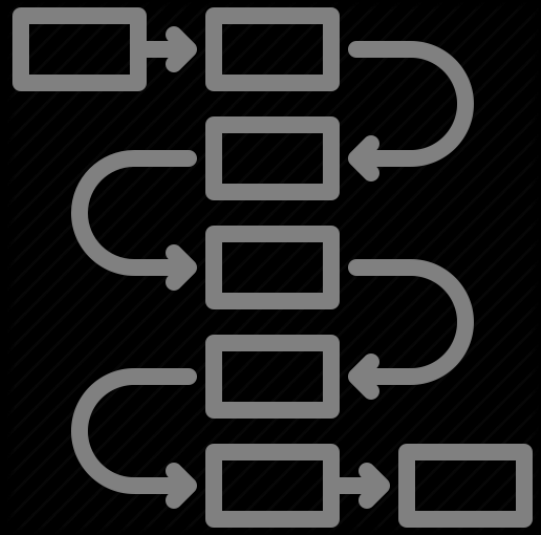


Misinformation is a Human Problem

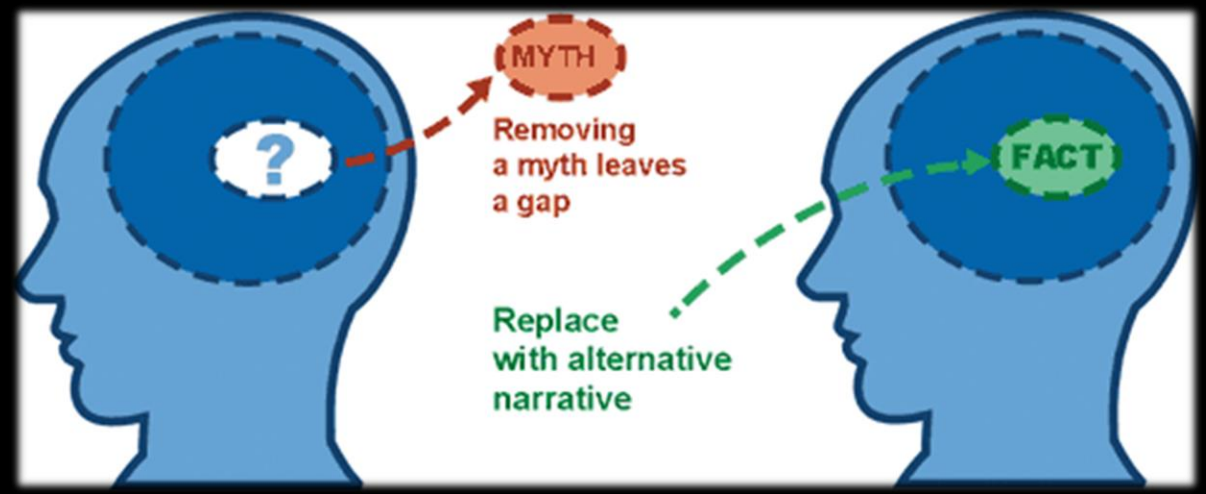


It’s So Sticky…





Debunking Misinformation...



Positive Intentions…

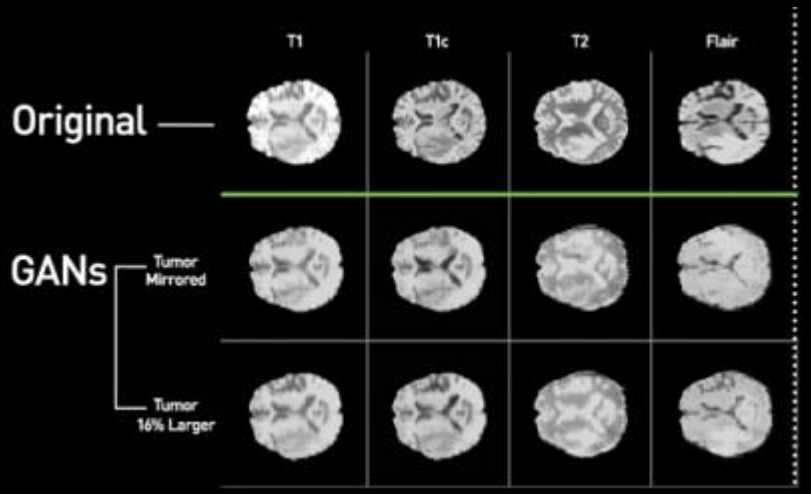


Image: Courtesy Shin et al.

"What it basically means is: to change the perception of reality of every [person] to such an extent that despite of the abundance of information no one is able to come to sensible conclusions in the interest of defending themselves, their families, their community, and their country.“

-Yuri Bezmenov (former KGB)

#ProjectDeepfake…

Example on YouTube
https://www.youtube.com/watch?v=iUOoApdY0lM

Follow on LinkedIn
https://www.linkedin.com/feed/hashtag/projectdeepfake/

Follow on Twitter
https://twitter.com/search?q=%23ProjectDeepfake

These Slides
https://github.com/r4v1np1nk/ProjectDeepFake/blob/master/LosingOurReality-AlyssaMiller-BSidesKnoxville.pdf

References…

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https://www.researchgate.net/publication/277816966_Misinformation_and_its_Correction

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https://arxiv.org/pdf/1806.02877.pdf

Exposing DeepFake Videos By Detecting Face Warping Artifacts
https://arxiv.org/pdf/1811.00656.pdf

Protecting World Leaders Against Deep Fakes
http://openaccess.thecvf.com/content_CVPRW_2019/papers/Media%20Forensics/Agarwal_Protecting_World_Leaders_Against_Deep_Fakes_CVPRW_2019_paper.pdf

Hiding Faces in Plain Sight: Disrupting AI Face Synthesis with Adversarial Perturbations
https://arxiv.org/pdf/1906.09288.pdf

Few-Shot Adversarial Learning of Realistic Neural Talking Head Models
https://arxiv.org/pdf/1905.08233.pdf

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Thank You

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