

Applications

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Deep Fakes

Problem of Deep Fakes

A single model animates all images given only a single source image

Driving video



Problem of Deep Fakes

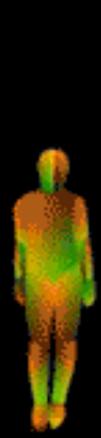


Problem of Deep Fakes

Body→Pose→Body Results



input



poses



output



input



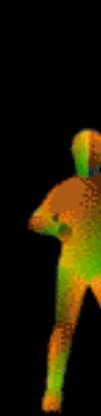
poses



output



input



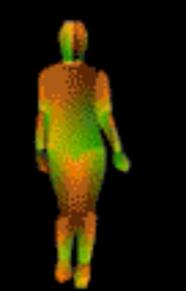
poses



output



input



poses



output

Is there a Problem?

How New is the Problem?

Fonda Speaks To Vietnam Veterans At Anti-War Rally



Actress And Anti-War Activist Jane Fonda Speaks to a crowd of Vietnam Veterans as Activist and former Vietnam Vet John Kerry (LEFT) listens and prepares to speak next concerning the war in Vietnam (AP Photo)

(a) Spliced Image



(b) Authentic Image



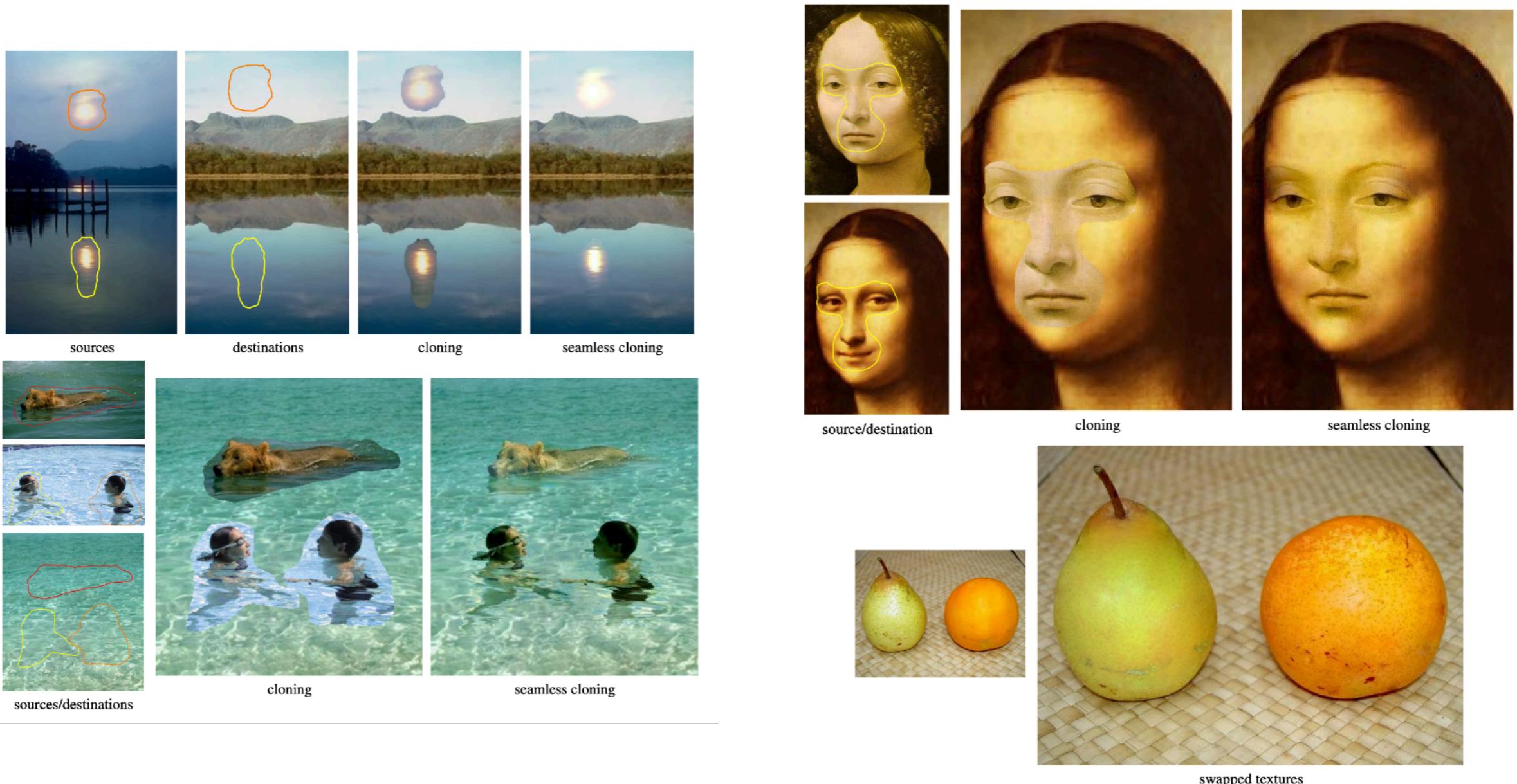
(c) Authentic Image

ation is as old as photography



How New is the Problem?

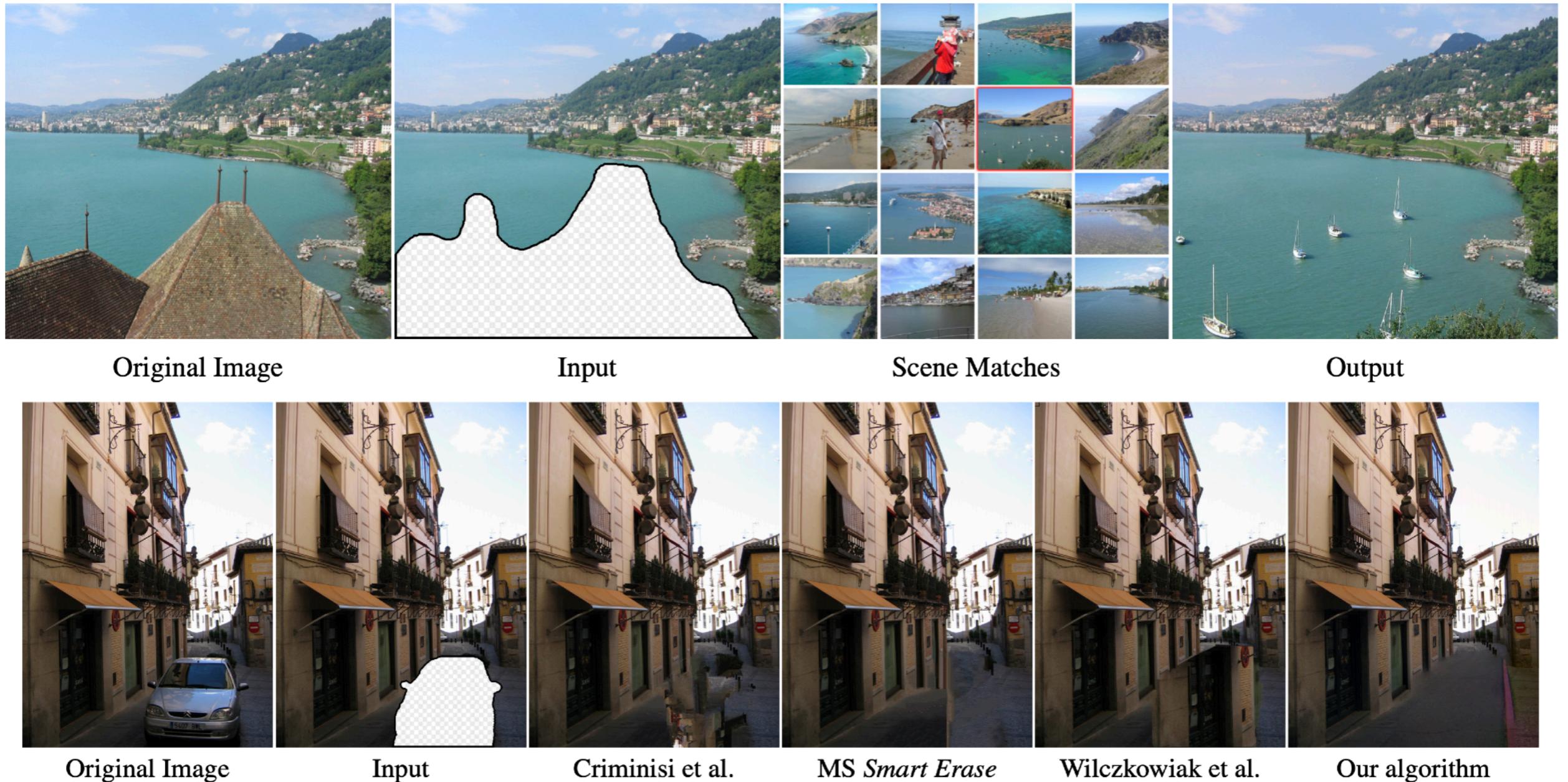
Not new...image manipulation is as old as photography



Hays, James, and Alexei A. Efros. "Scene completion using millions of photographs." SIGGRAPH'2007

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How New is the Problem?

So not new...but simplicity is new



CREATING GOLLUM

nature video

A Solution?

Deep fake detection tools need to be made simple!

Humans can detect 53.5% of manipulated images



Wang, Sheng-Yu, et al. "Detecting Photoshopped Faces by Scripting Photoshop." ICCV'2019

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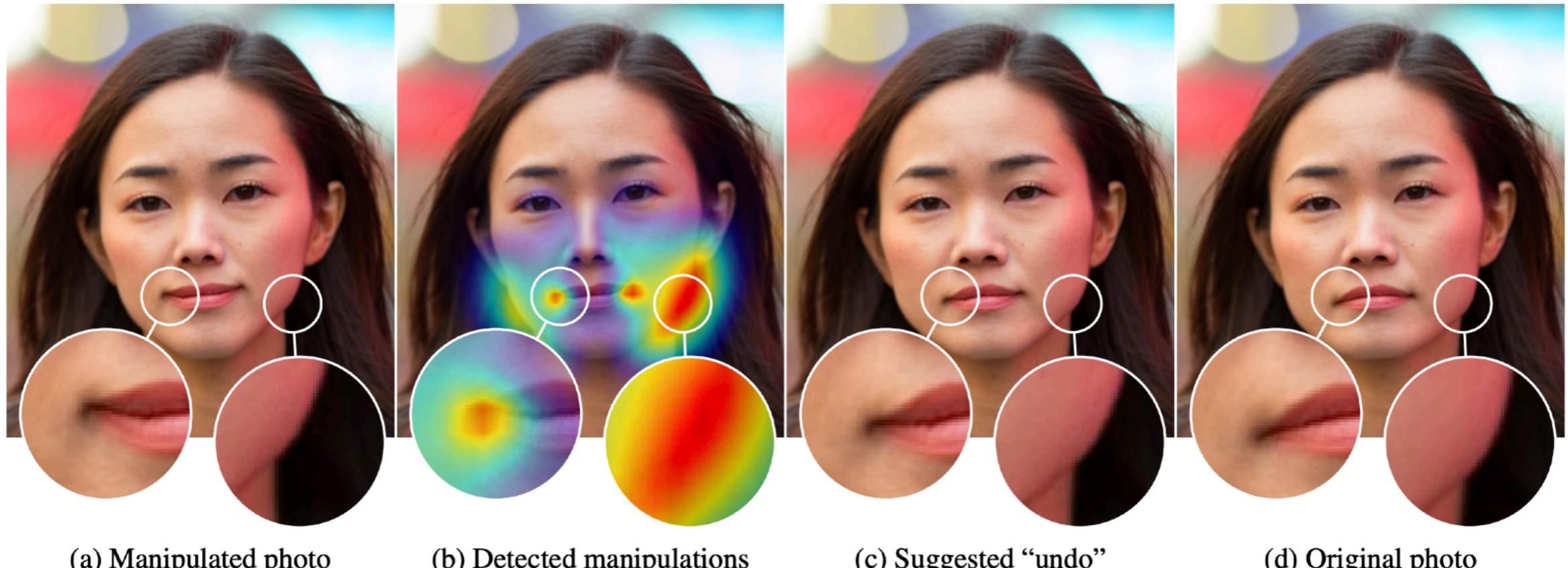
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Detecting Deep Fakes

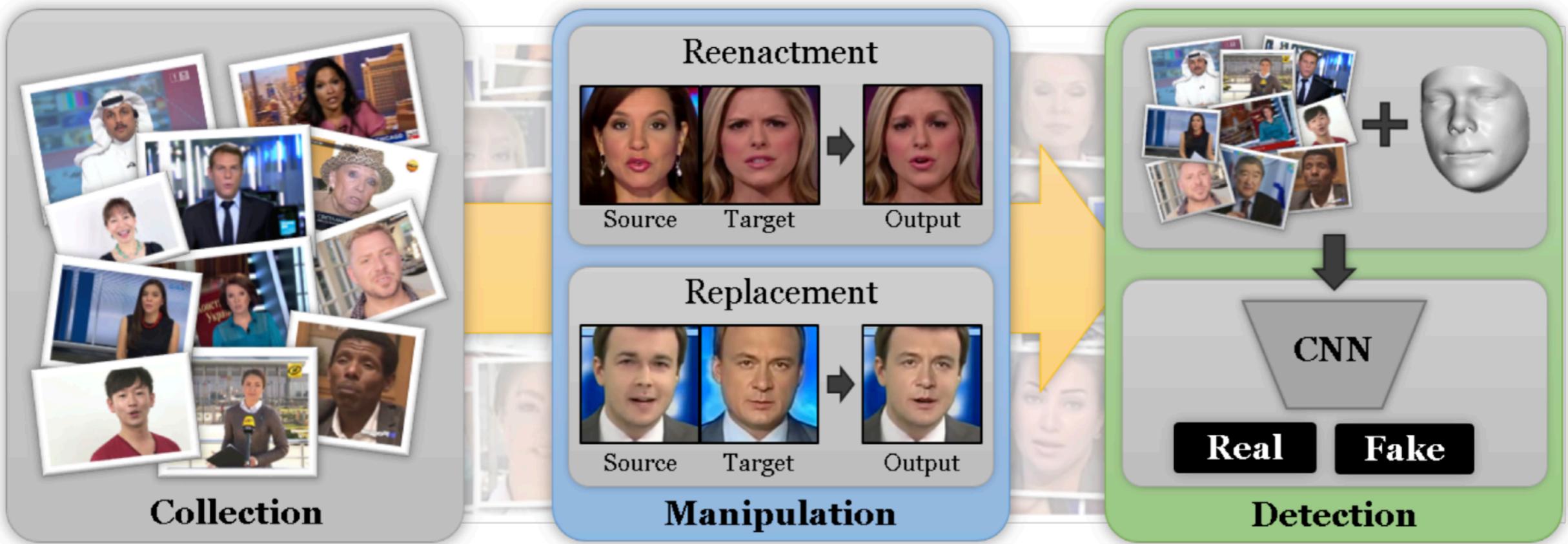
Training Data: use photoshop Face-Aware Liquify tool



Wang, Sheng-Yu, et al. "Detecting Photoshopped Faces by Scripting Photoshop." ICCV'2019

FaceForensics++

Uses Deep Fakes, Face2Face, FaceSwap and NeuralTextures



Rössler, Andreas, et al. "Faceforensics++: Learning to detect manipulated facial images." ICCV'2019

Future of Deep Fake Detection

- Algorithm independent methods
- Image and video watermarking
- Algorithm + detection methods
- Liveliness detection