

Super powering technical artists with Deep Learning

by Cesar Romero





Style Transfer

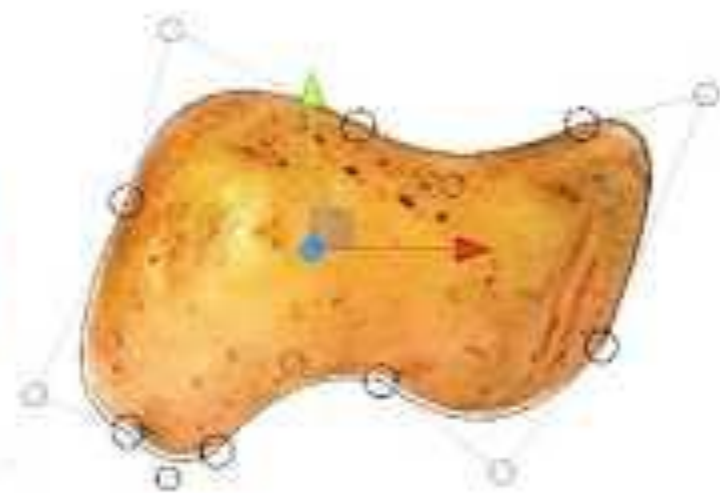






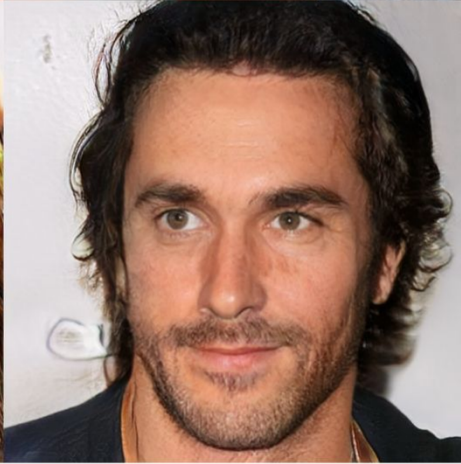
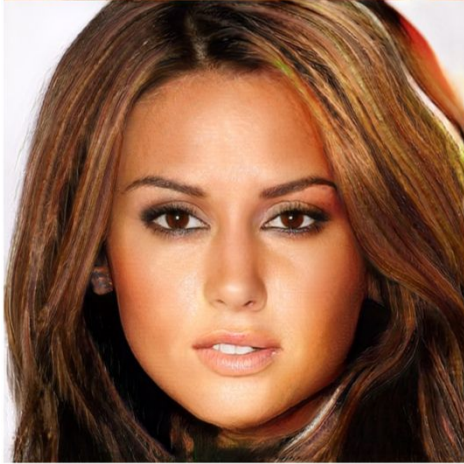


Neural doodle



Style Transfer

- A Neural Algorithm of Artistic Style. CVPR16
- Semantic Style Transfer and Turning Two-Bit Doodles into Fine Artworks.
- <https://deepart.io/>
- <https://github.com/alexjc/neural-doodle> (AGPLv3 license)
- <https://demos.algorithmia.com/video-toolbox/>





An abstract graphic on the left side of the slide, composed of numerous thin, curved lines in various colors (red, green, blue, yellow, purple) that sweep upwards and to the right, creating a sense of motion and depth against the black background.

Generative adversarial networks

INSTRUCTION: press +/- to adjust feature, toggle feature name to lock the feature



random lock

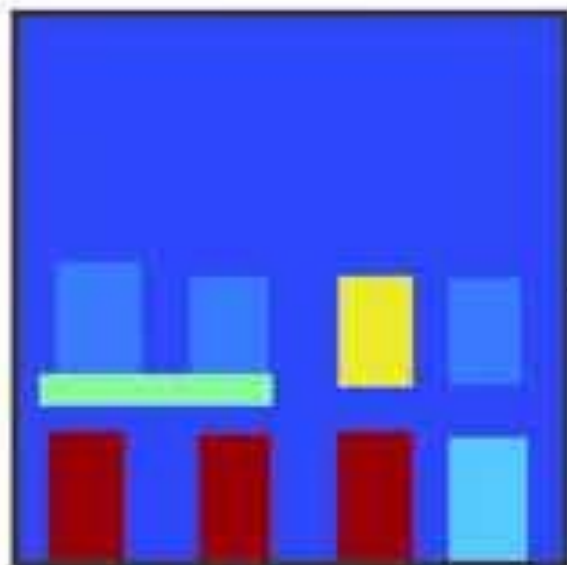
Male	Age	Skin_Tone
- +	- +	- +
Bangs	Hairline	Bald
- +	- +	- +
Big_Nose	Pointy_Nose	Makeup
- +	- +	- +
Smiling	Mouth_Open	Wavy_Hair
- +	- +	- +
Beard	Goatee	Sidburns
- +	- +	- +
Blond_Hair	Black_Hair	Gray_Hair
- +	- +	- +
Eyeglasses	Earrings	Necktie
- +	- +	- +

Image translation

TOOL

- background
- wall
- door
- window
- window sill
- window head
- shutter
- balcony
- trim
- cornice
- column
- entrance

INPUT



undo

clear

random

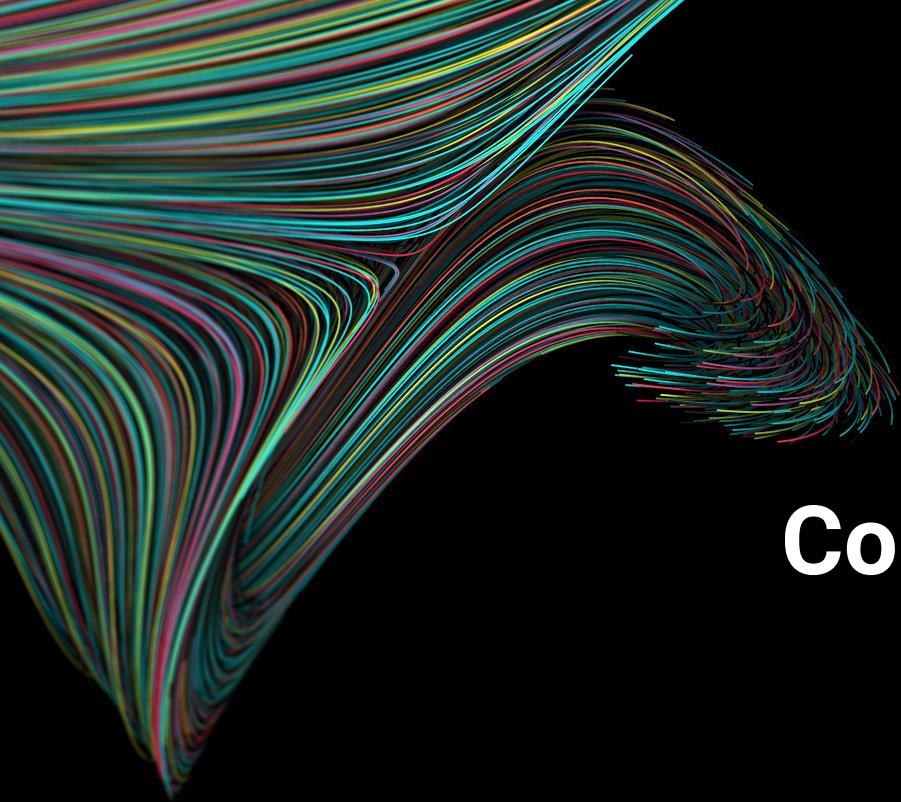
pix2pix

process

OUTPUT



save

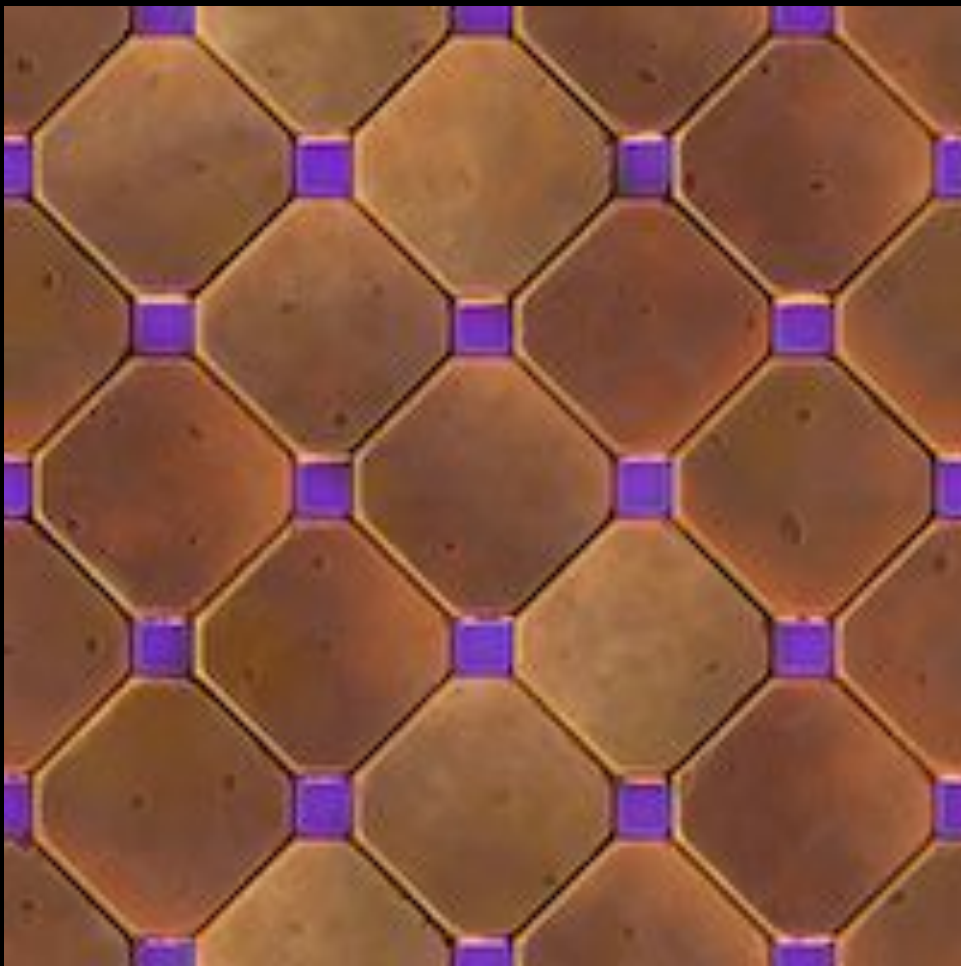


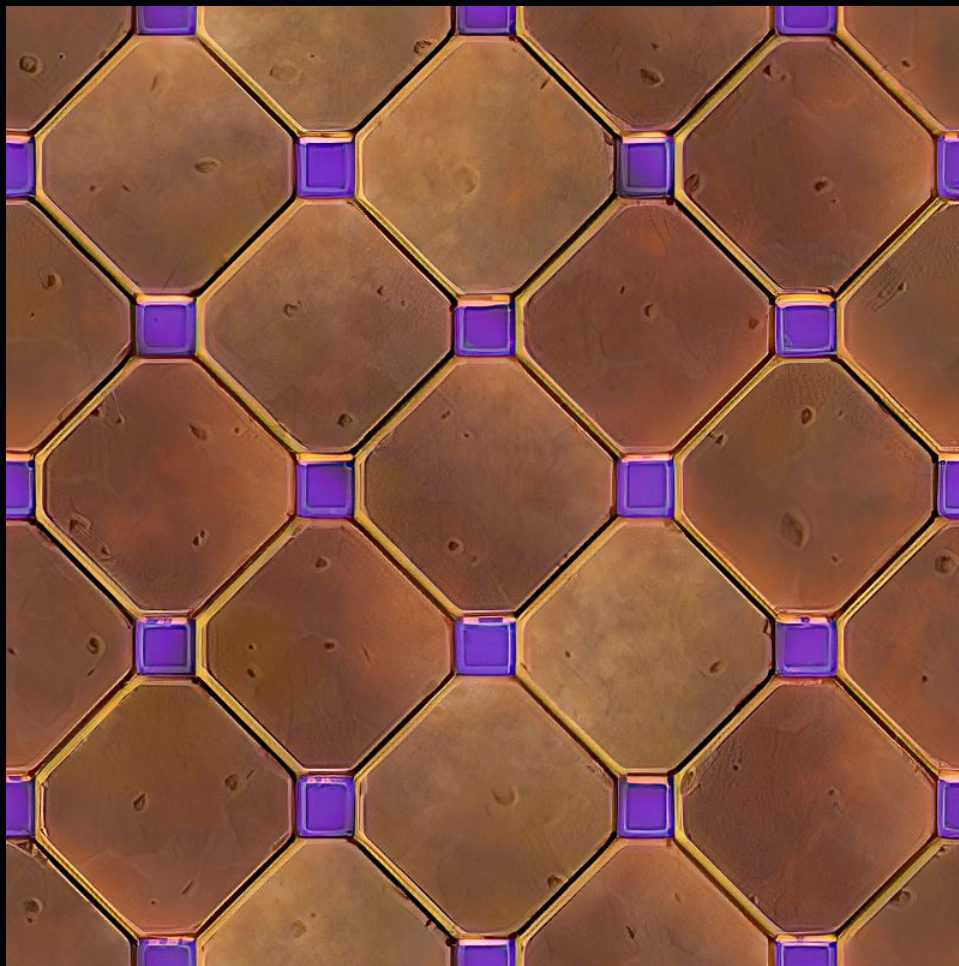
Colorize

Photo Colorization Before and After



Super resolution







Generative Models

- Image-to-Image Translation with Conditional Adversarial Networks. CVPR 2017
- A Style-Based Generator Architecture for Generative Adversarial Networks. 2018
- ESRGAN: Enhanced Super-Resolution Generative Adversarial Networks. ECCV18
- <https://thispersondoesnotexist.com/>
- https://github.com/SummitKwan/transparent_latent_gan (MIT license)
- <https://github.com/xinntao/ESRGAN> (Apache 2 license)
- <https://github.com/nashory/pggan-pytorch> (MIT license)
- <https://github.com/phillipi/pix2pix> (BSD license)



Story telling

In a shocking finding, scientist discovered a herd of unicorns living in a remote, previously unexplored valley, in the Andes Mountains. Even more surprising to the researchers was the fact that the unicorns spoke perfect English.

The scientist named the population, after their distinctive horn, Ovid's Unicorn. These four-horned, silver-white unicorns were previously unknown to science.

Now, after almost two centuries, the mystery of what sparked this odd phenomenon is finally solved.

Dr. Jorge Pérez, an evolutionary biologist from the University of La Paz, and several companions, were exploring the Andes Mountains when they found a small valley, with no other animals or humans. Pérez noticed that the valley had what appeared to be a natural fountain, surrounded by two peaks of rock and silver snow.

Pérez and the others then ventured further into the valley. "By the time we reached the top of one peak, the water looked blue, with some crystals on top," said Pérez.

Pérez and his friends were astonished to see the unicorn herd. These creatures could be seen from the air without having to move too much to see them – they were so close they could touch their horns.

While examining these bizarre creatures the scientists discovered that the creatures also spoke some fairly regular English. Pérez stated, "We can see, for example, that they have a common 'language,' something like a dialect or dialectic."

Dr. Pérez believes that the unicorns may have originated in Argentina, where the animals were believed to be descendants of a lost race of people who lived there before the arrival of humans in those parts of South America.

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Audio



Speech



1 Second



Music

Multitrack Interpolation

Ready to play!

Style 1

Random

Import MIDI

Play

Style 2

Random

Import MIDI

Play the Whole Thing

Save as MIDI

TENORI-OFF

Synth

Drums

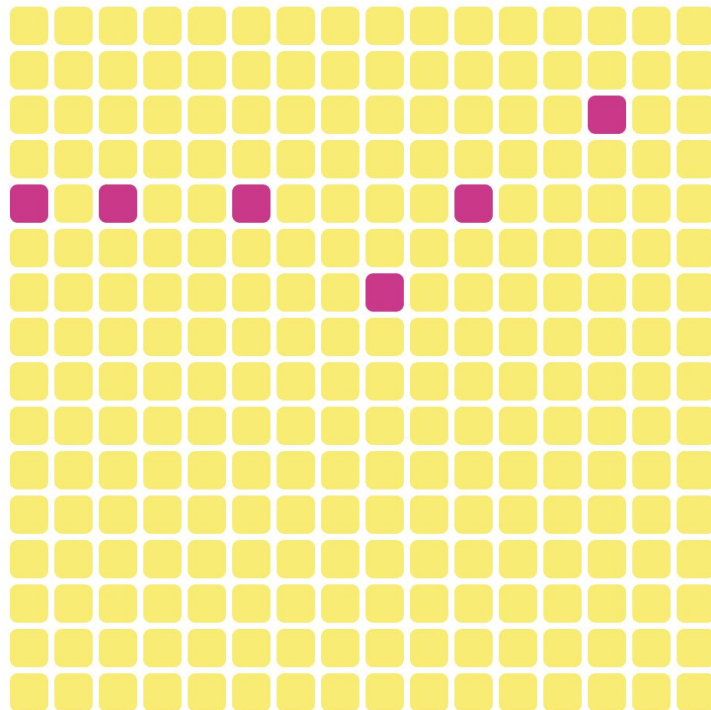
Load ML (~10Mb)

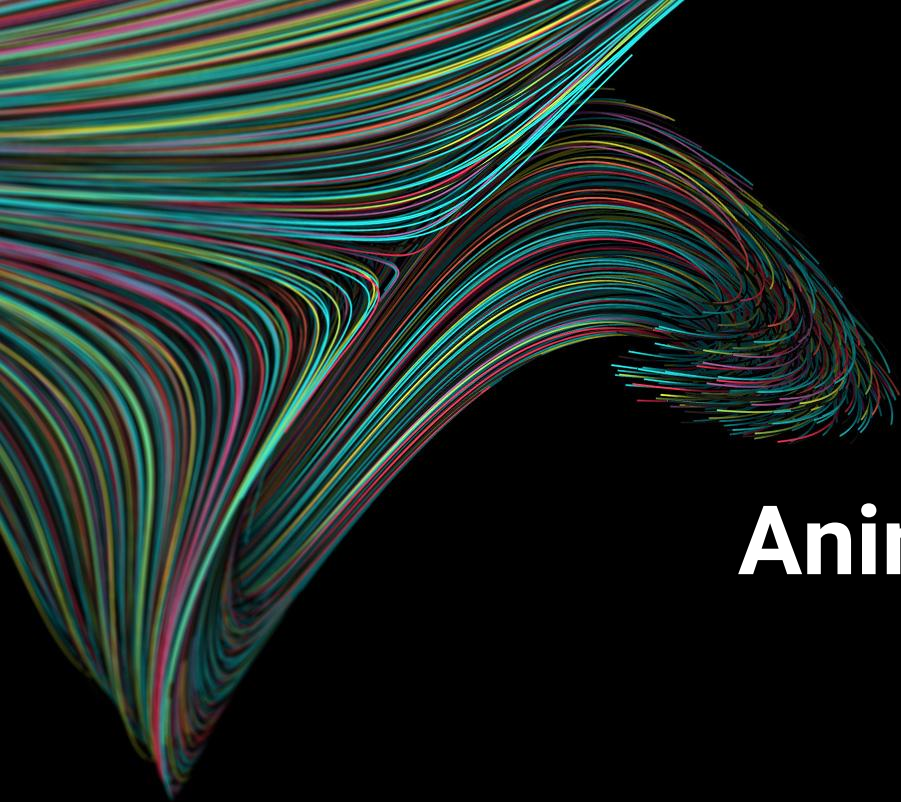
Step 100 ms

Play!

Reset

?



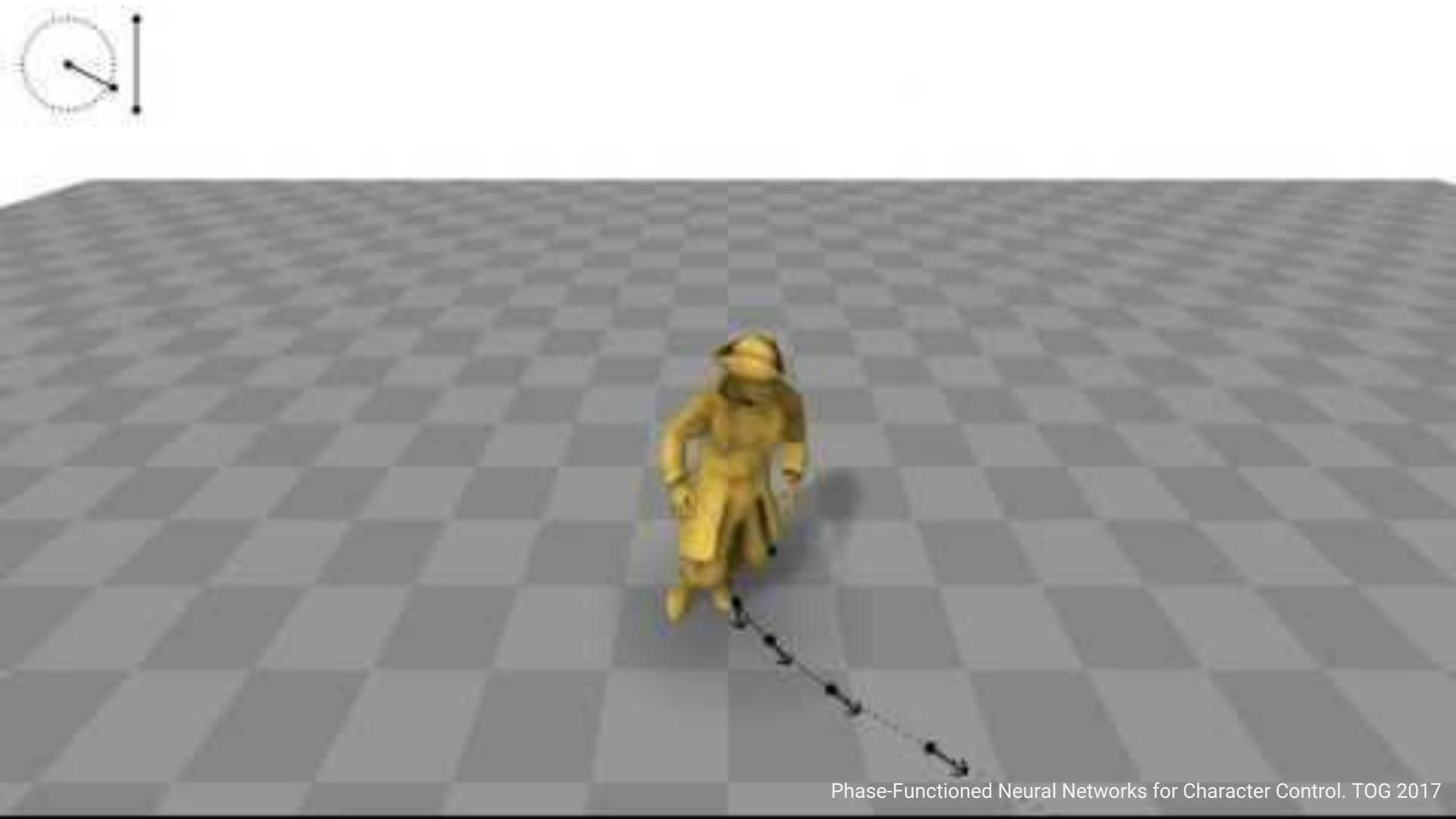


Animation

Smoke



Bipedal





Quadruped

Mode-Adaptive Neural Networks for Quadruped Motion Control

- SIGGRAPH 2018 Vancouver, Canada -



He Zhang*
Sebastian Starke*
Taku Komura
Jun Saito

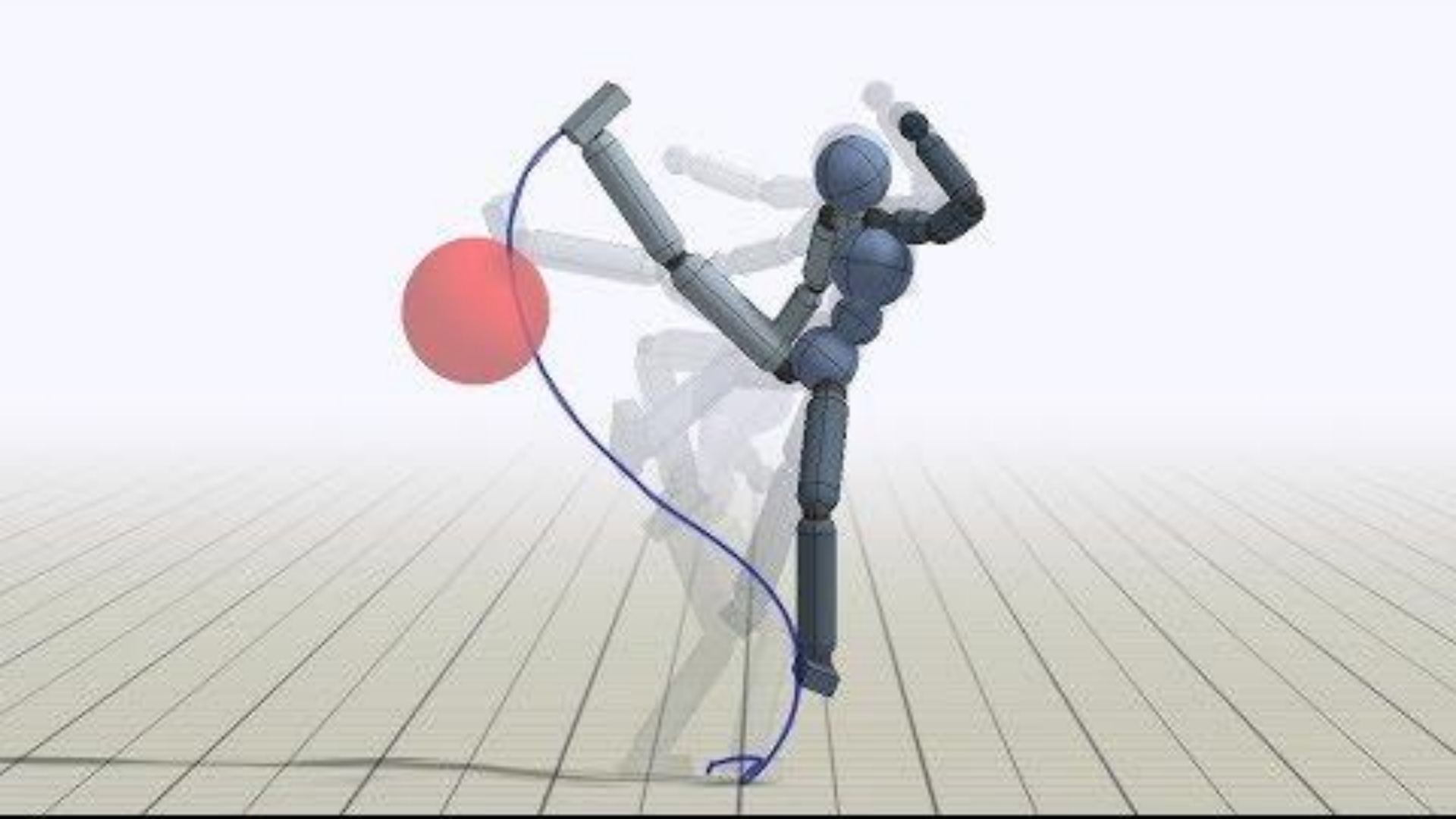


THE UNIVERSITY
of EDINBURGH



Mode-adaptive neural networks for quadruped motion control. ACM TOG 2018

Deep mimic



Animation

- Accelerating Eulerian Fluid Simulation With Convolutional Networks. CVPR 17
- Phase-functioned neural networks for character control. SIGGRAPH 2017
- Mode-adaptive Neural Networks for Quadruped Motion Control. SIGGRAPH 2018
- DeepMimic: Example-Guided Deep Reinforcement Learning of Physics-Based Character Skills. ACM TOG 2018



Questions?

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Appendix

