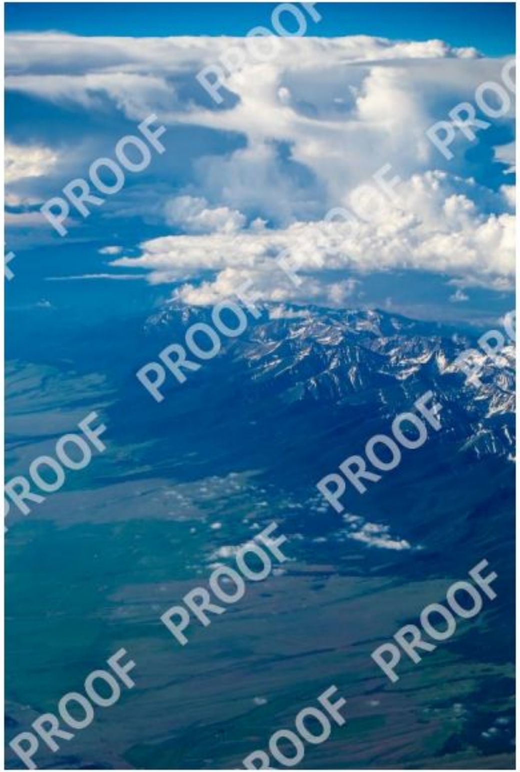
Ownership protection in ML processes

Tanja Sarcevic

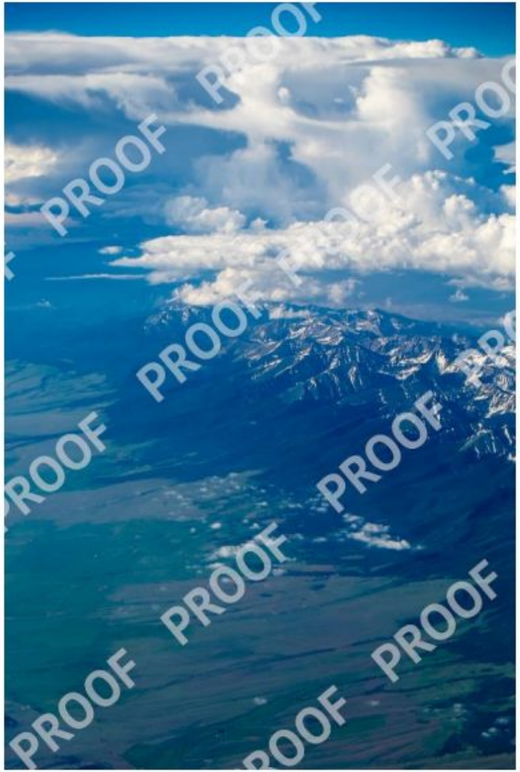
SBA Research & TU Vienna

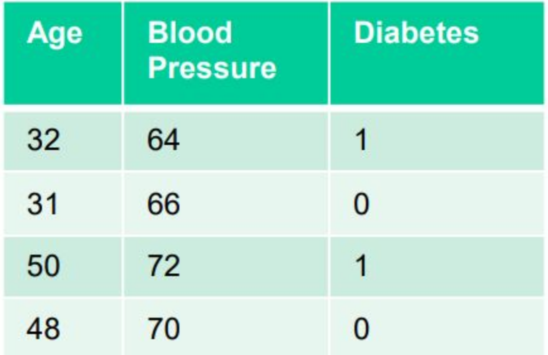
Data fingerprinting and watermarking

Data fingerprinting and watermarking

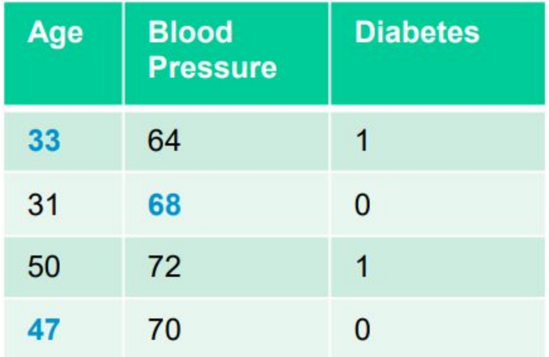


Data fingerprinting and watermarking





Age	Blood Pressure	Diabetes
32	64	1
31	66	0
50	72	1
48	70	0

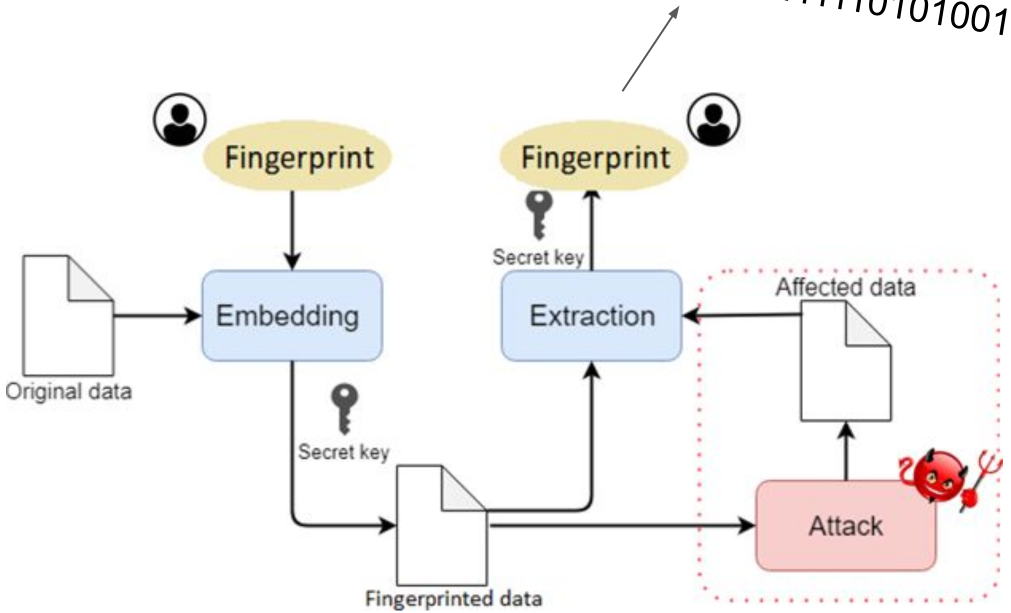


Age	Blood Pressure	Diabetes
33	64	1
31	**68**	0
50	72	1
47	70	0

Fingerprinting process

Main ingredients:

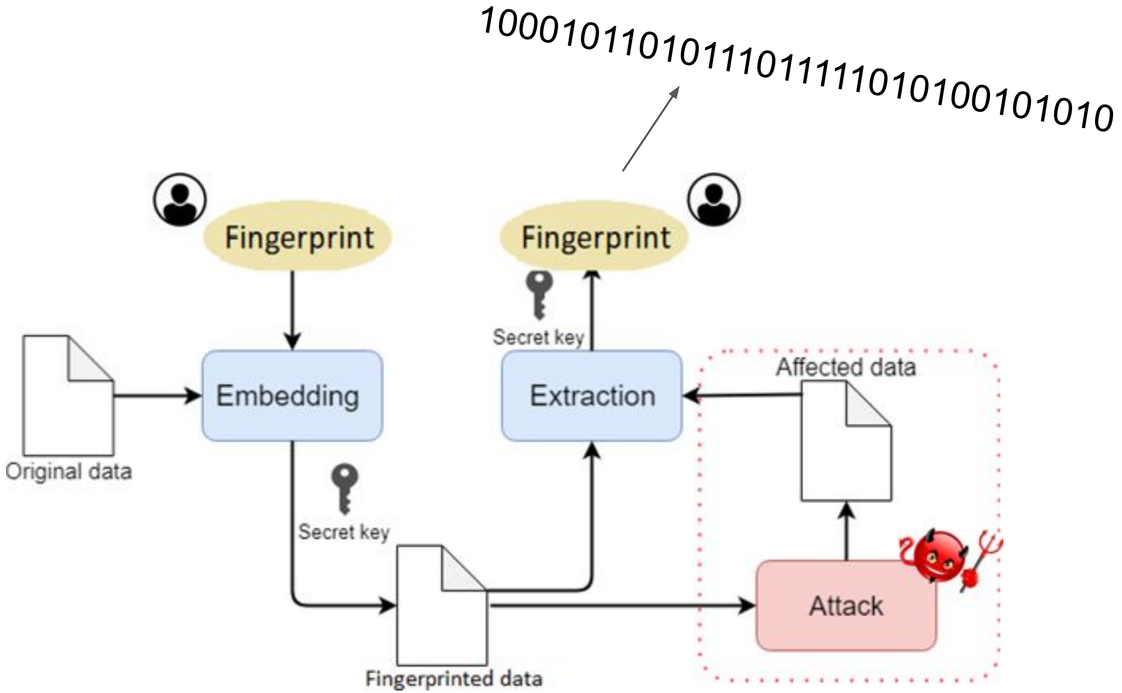
10001011010111011111010100101010



Fingerprinting process

Main ingredients:

- hash function

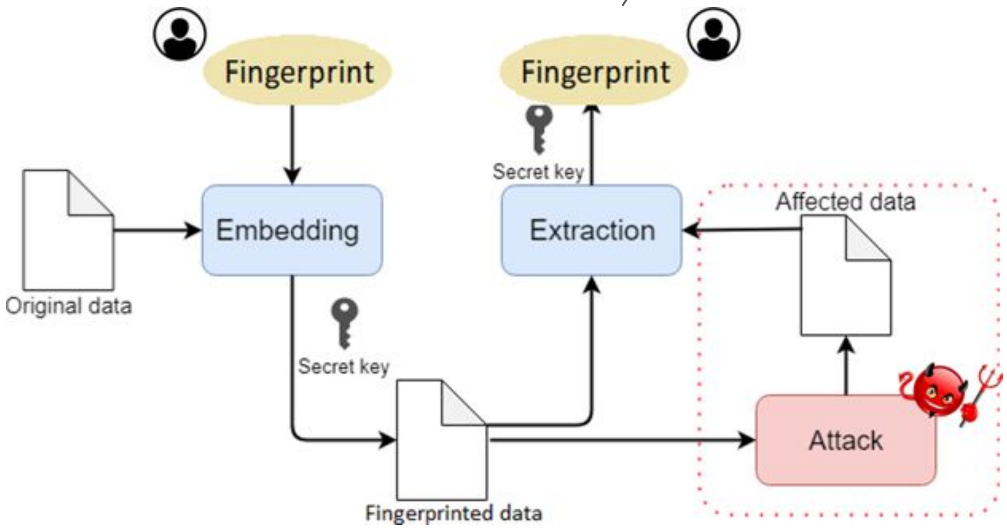


Fingerprinting process

Main ingredients:

- hash function
- pseudo-random number sequence generator

10001011010111011111010100101010

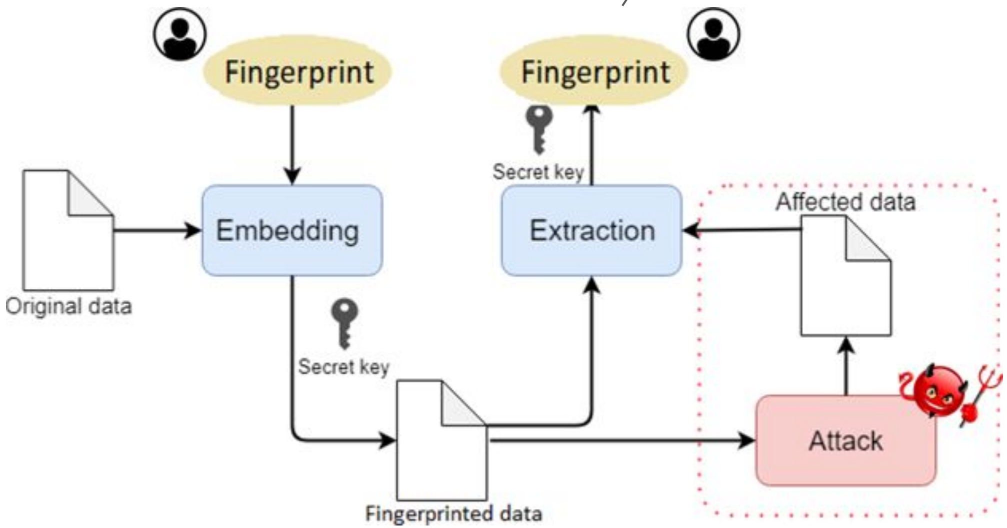


Fingerprinting process

Main ingredients:

- hash function
- pseudo-random number sequence generator
- owner’s secret key

10001011010111011111010100101010



Watermarking ML models

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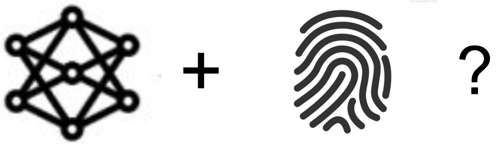
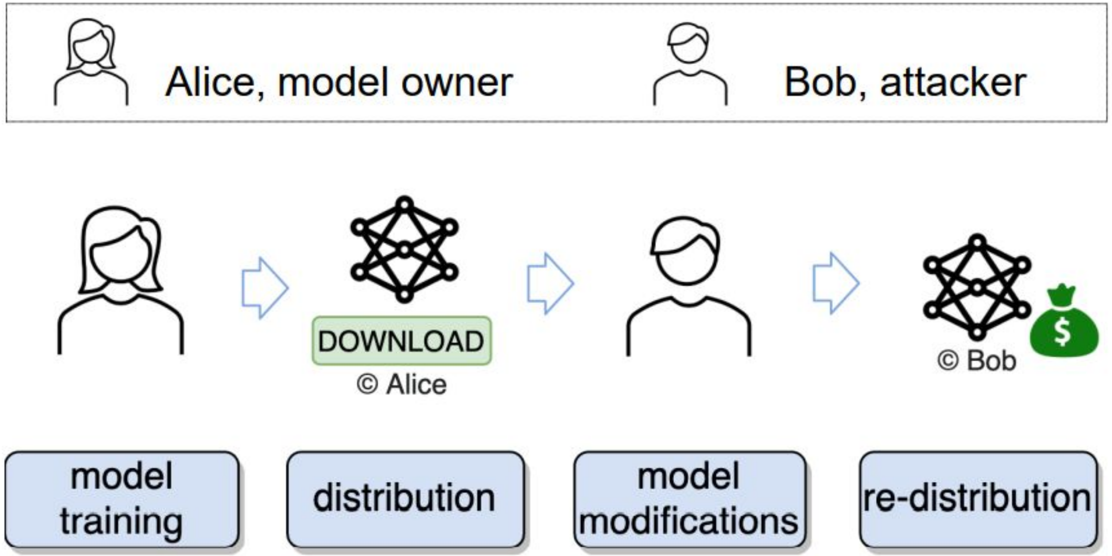
Someone

Uchida et al.: Embedding Watermarks into Deep Neural Networks https://dl.acm.org/doi/10.1145/3078971.3078974

Watermarking ML models





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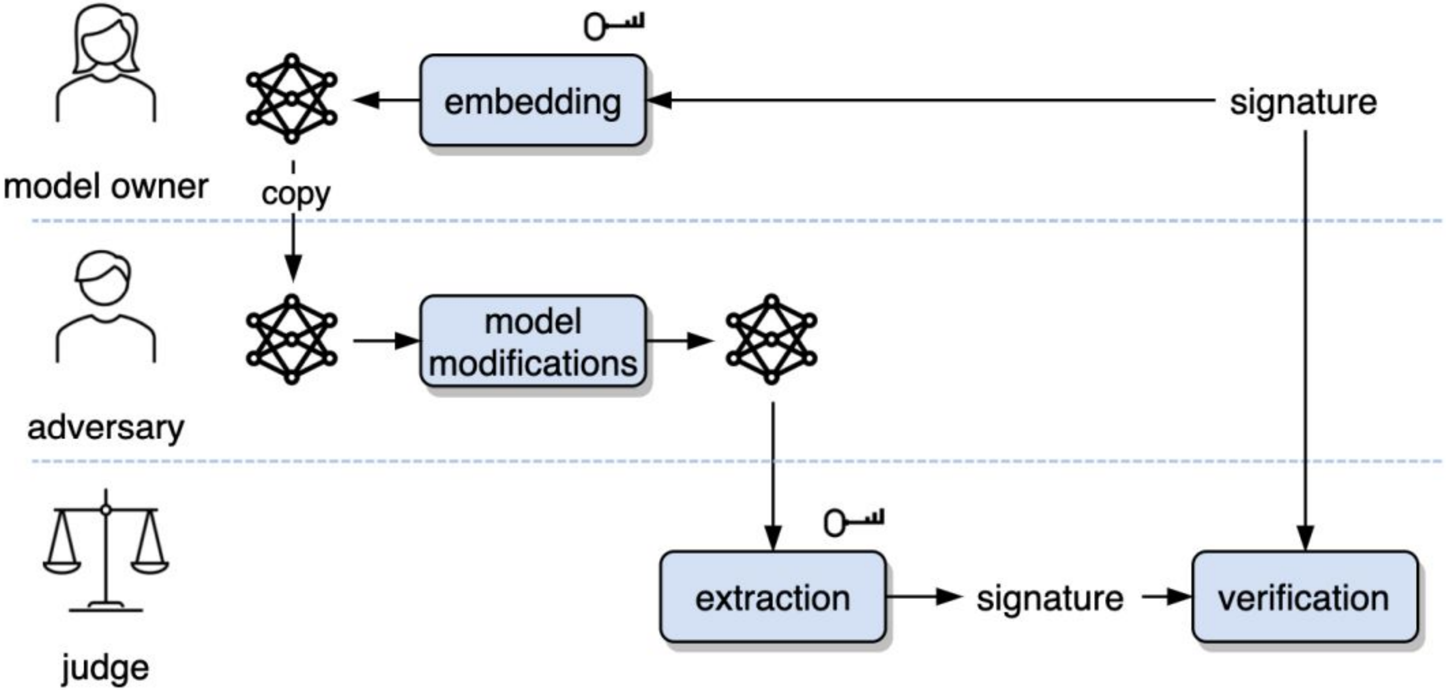
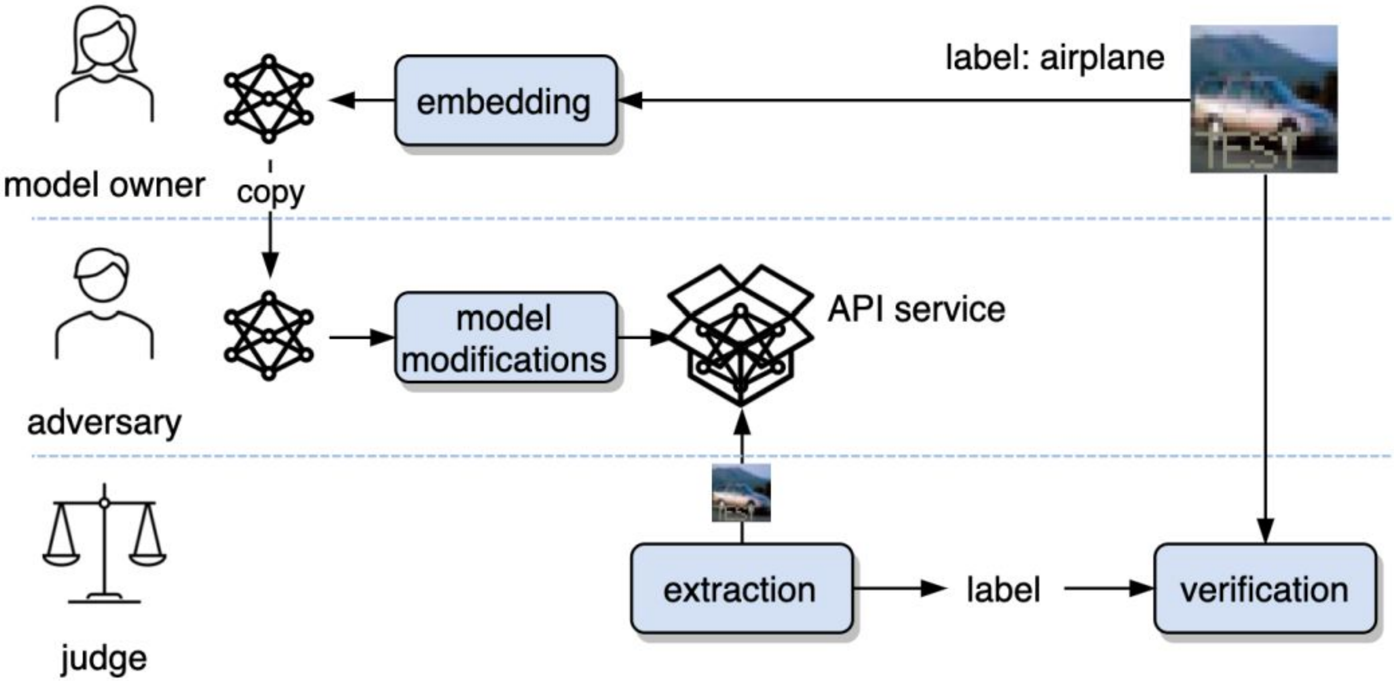
Uchida et al.: Embedding Watermarks into Deep Neural Networks https://dl.acm.org/doi/10.1145/3078971.3078974

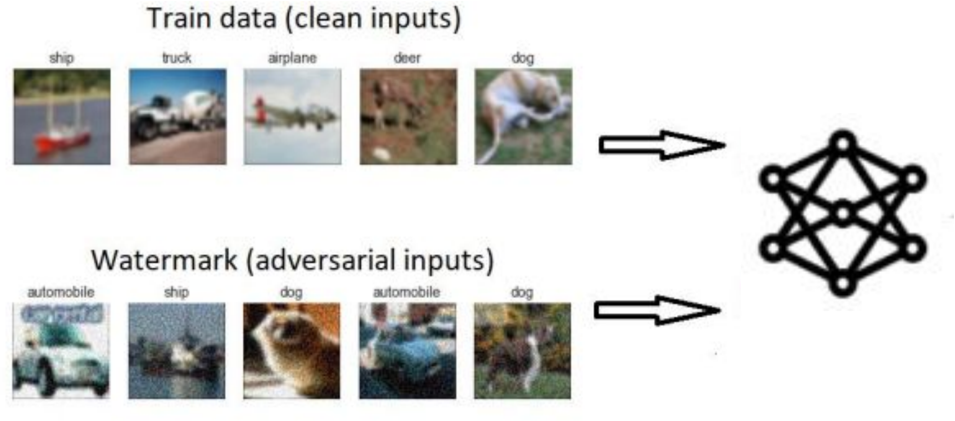
White-box model watermarking



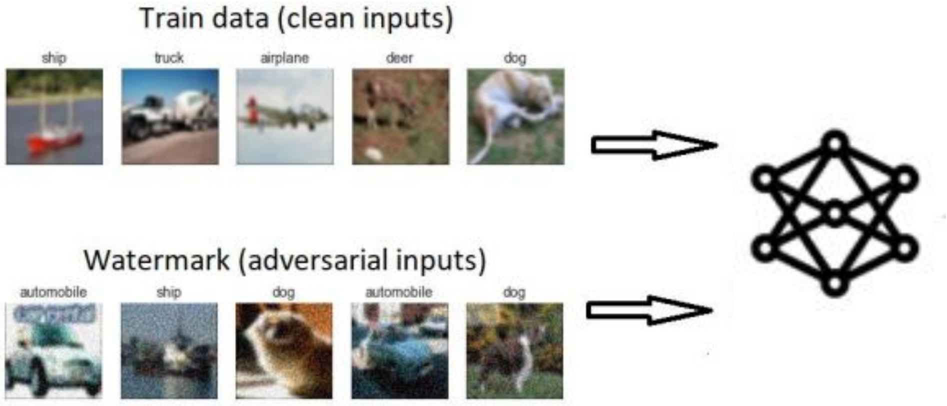
Black-box model watermarking



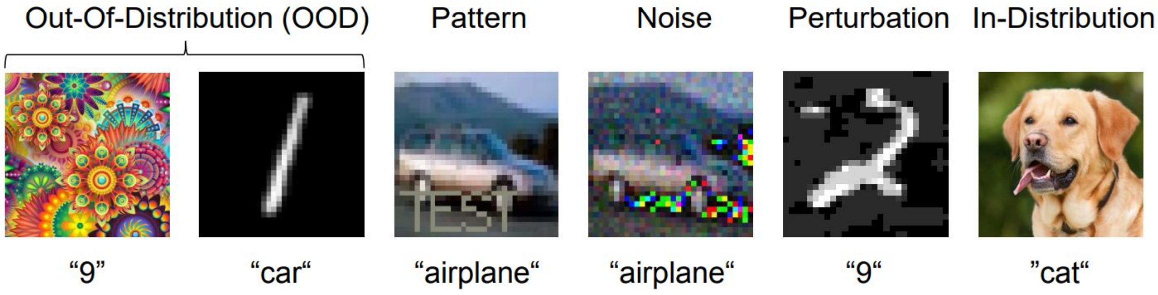
Black-box model watermarking



Black-box model watermarking



Trigger images:



Thank you!

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github/tanjascats

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