

Lossy compression for lossless prediction

EECS Seminar: Advanced Topics in Machine Learning

Romain Graux

March 15, 2022

10^{21} - 10^{23} bytes data collected per year

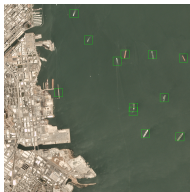
10^{21} - 10^{23} bytes data collected per year

→ But most data is processed by algorithms performing **downstream tasks**.

Motivation

10^{21} - 10^{23} bytes data collected per year

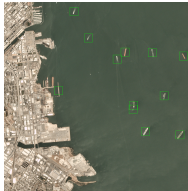
→ But most data is processed by algorithms performing **downstream tasks**.



Motivation

10^{21} - 10^{23} bytes data collected per year

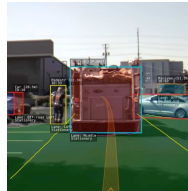
→ But most data is processed by algorithms performing **downstream tasks**.



Motivation

10^{21} - 10^{23} bytes data collected per year

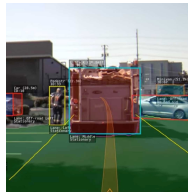
→ But most data is processed by algorithms performing **downstream tasks**.



Motivation

10^{21} - 10^{23} bytes data collected per year

→ But most data is processed by algorithms performing **downstream tasks**.



Motivation

10^{21} - 10^{23} bytes data collected per year

→ But most data is processed by algorithms performing **downstream tasks**.

Yet current compressors optimize high **perceptual** fidelity

10^{21} - 10^{23} bytes data collected per year

→ But most data is processed by algorithms performing **downstream tasks**.

Yet current compressors optimize high **perceptual** fidelity

- Stores too much not needed information
- Does not ensure good task performance

10^{21} - 10^{23} bytes data collected per year

→ But most data is processed by algorithms performing **downstream tasks**.

Yet current compressors optimize high **perceptual** fidelity

- Stores too much not needed information
- Does not ensure good task performance



Source

Motivation

10^{21} - 10^{23} bytes data collected per year

→ But most data is processed by algorithms performing **downstream tasks**.

Yet current compressors optimize high **perceptual** fidelity

- Stores too much not needed information
- Does not ensure good task performance



Source



High bitrate

Motivation

10^{21} - 10^{23} bytes data collected per year

→ But most data is processed by algorithms performing **downstream tasks**.

Yet current compressors optimize high **perceptual** fidelity

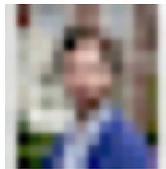
- Stores too much not needed information
- Does not ensure good task performance



Source



High bitrate



Low bitrate

Motivation

10^{21} - 10^{23} bytes data collected per year

→ But most data is processed by algorithms performing **downstream tasks**.

Yet current compressors optimize high **perceptual** fidelity

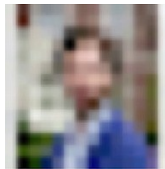
- Stores too much not needed information
- Does not ensure good task performance



Source



High bitrate



Low bitrate



Desired