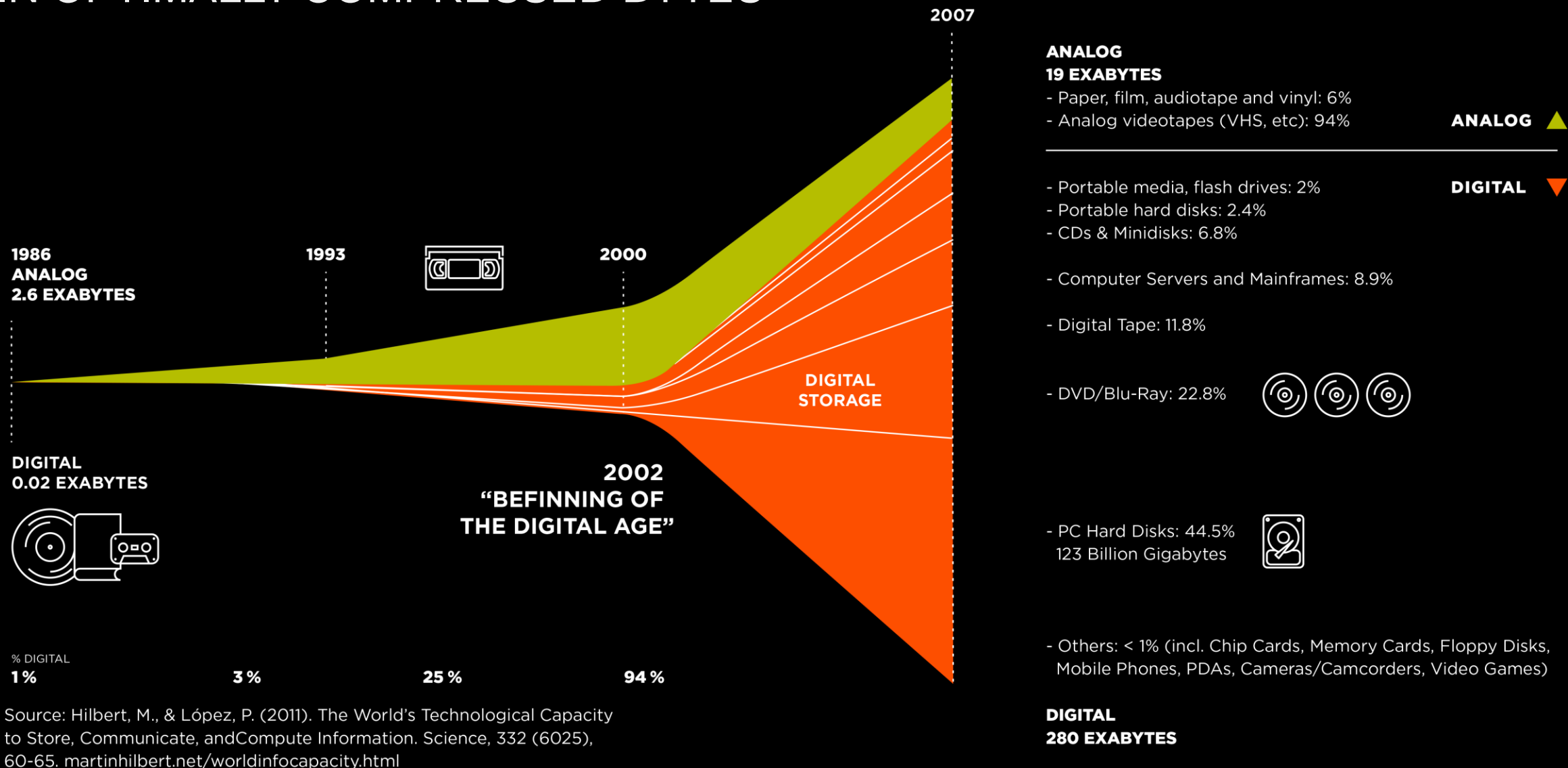# The Data Delusion
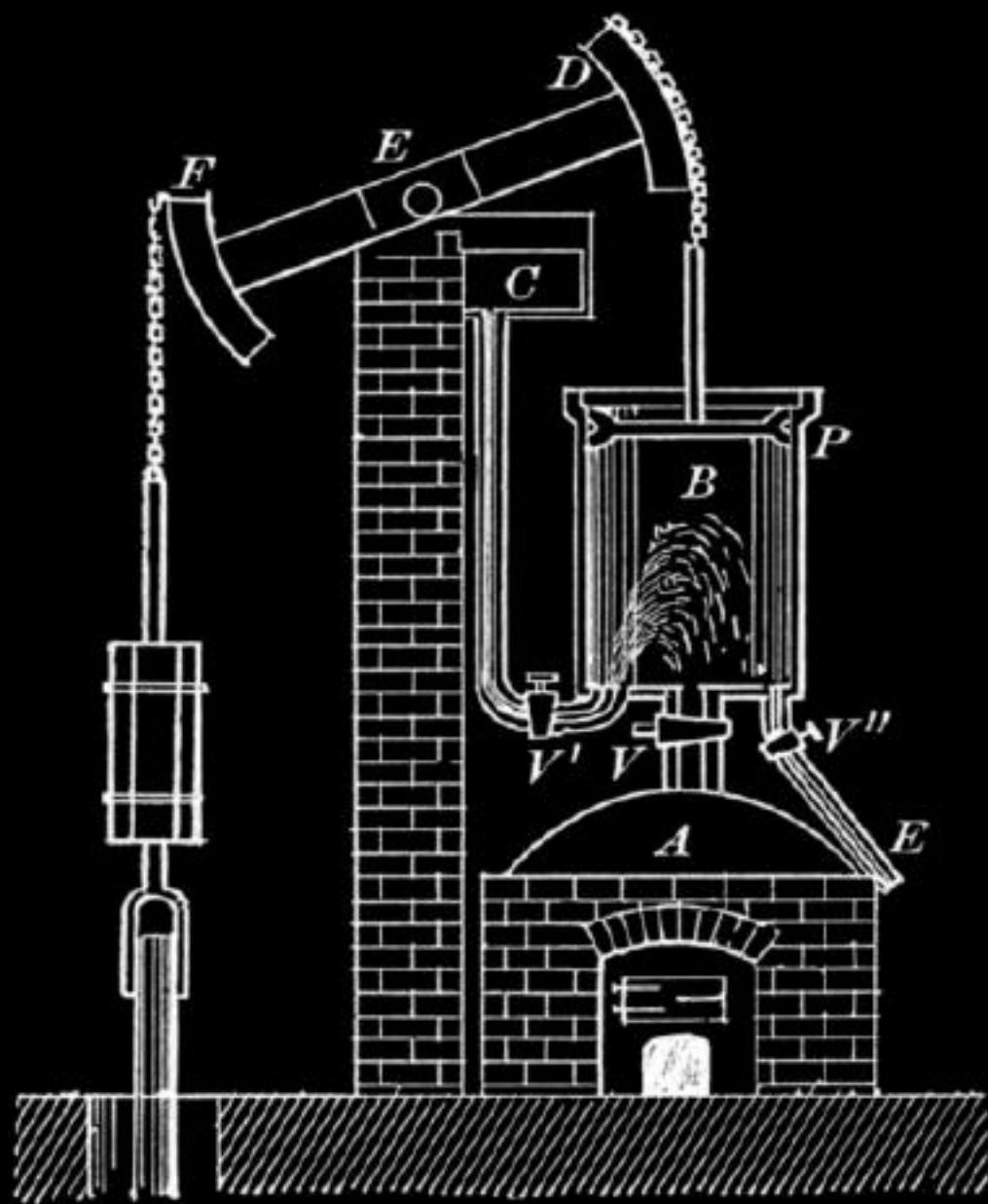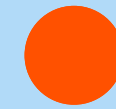
NEIL LAWRENCE

UNIVERSITY OF SHEFFIELD

GLOBAL INFORMATION STORAGE CAPACITY
IN OPTIMALLY COMPRESSED BYTES

2007

ANALOG
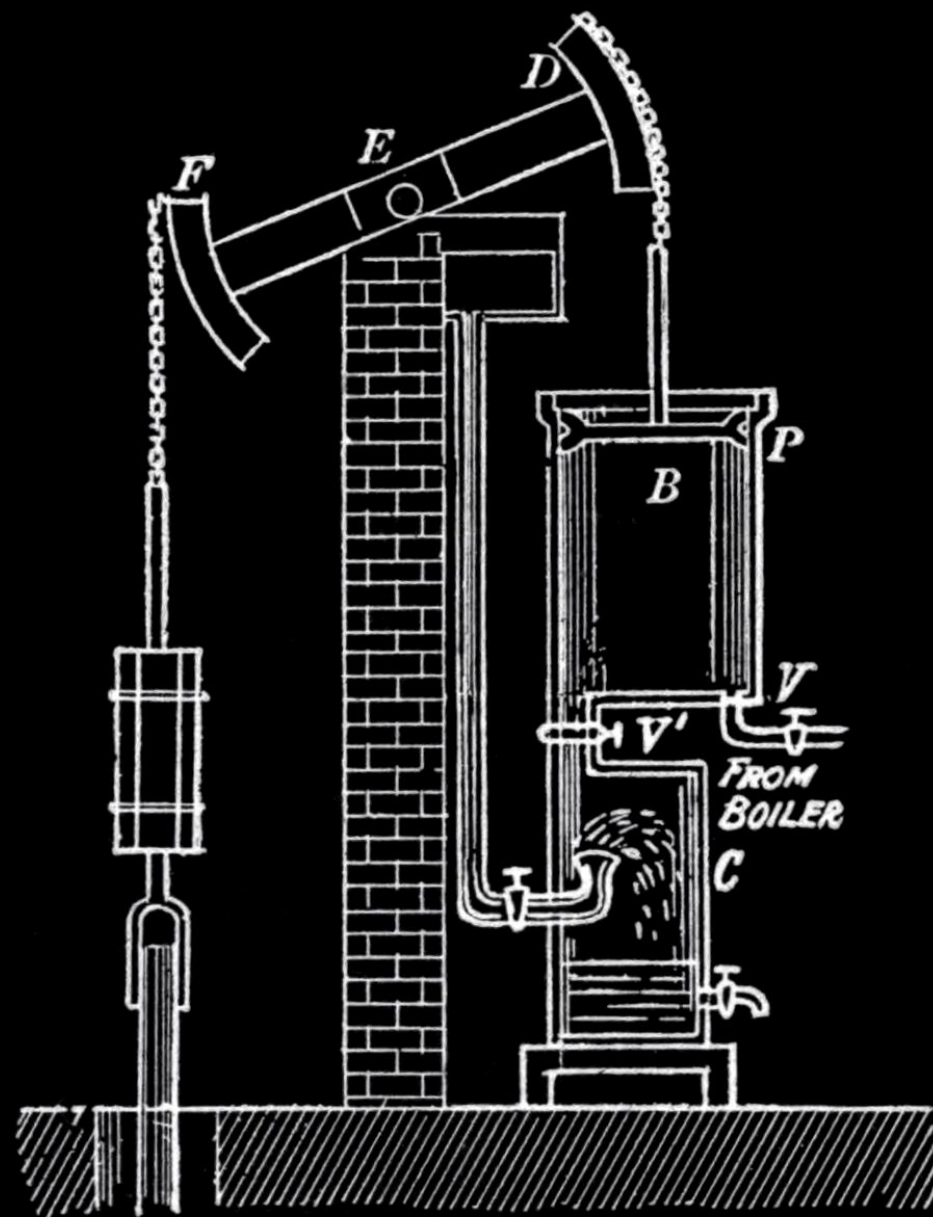**19 EXABYTES**
- Paper, film, audiotape and vinyl: 6%
- Analog videotapes (VHS, etc): 94%

ANALOG ▲

- Portable media, flash drives: 2%
- Portable hard disks: 2.4%
- CDs & Minidisks: 6.8%

DIGITAL ▼

- Computer Servers and Mainframes: 8.9%

- Digital Tape: 11.8%

- DVD/Blu-Ray: 22.8%

1986
ANALOG
2.6 EXABYTES

1993

2000

**DIGITAL
STORAGE**

DIGITAL
0.02 EXABYTES

2002
**"BEFINNING OF
THE DIGITAL AGE"**

- PC Hard Disks: 44.5%
  123 Billion Gigabytes

- Others: < 1% (incl. Chip Cards, Memory Cards, Floppy Disks,
  Mobile Phones, PDAs, Cameras/Camcorders, Video Games)

% DIGITAL
1%   3 %   25 %   94 %

DIGITAL
280 EXABYTES

Source: Hilbert, M., & López, P. (2011). The World's Technological Capacity
to Store, Communicate, andCompute Information. Science, 332 (6025),
60-65. martinhilbert.net/worldinfocapacity.html

Outline of the DeepFace architecture. A front-end of a single convolution-pooling-convolution filtering on the rectified input, followed by three locally-connected layers and two fully-connected layers. Color illustrates feature maps produced at each layer. The net includes more than 120 million parameters, where more than 95% come from the local and fully connected layers.
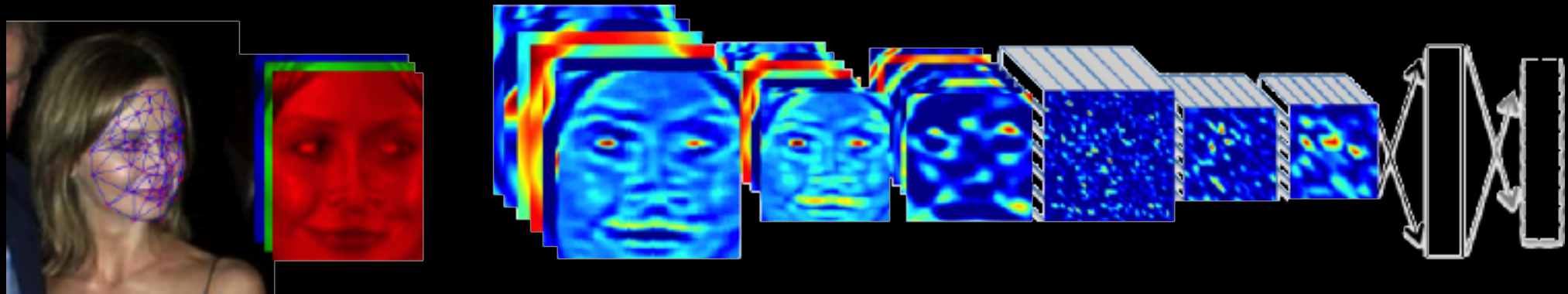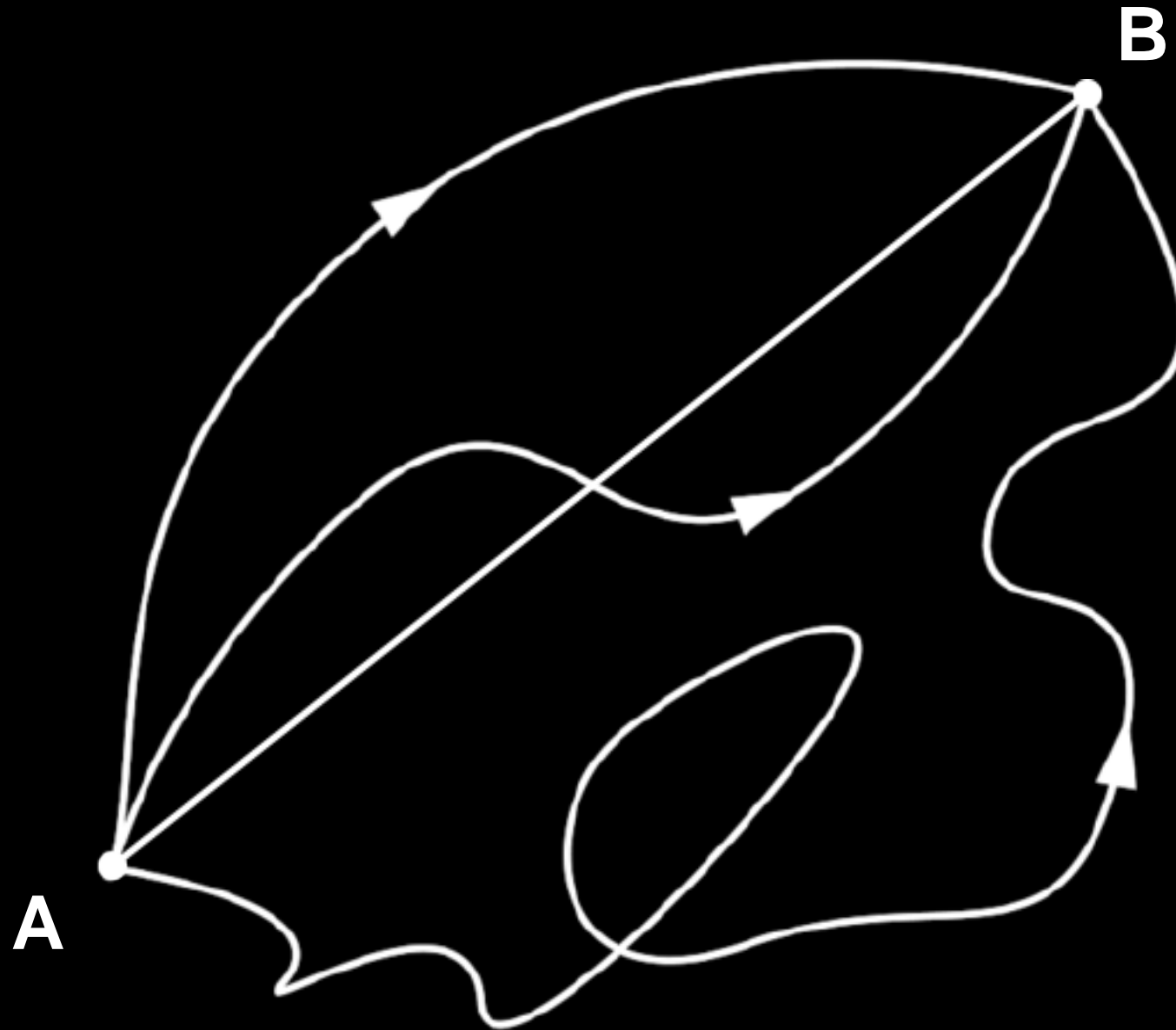
$$f(x)$$
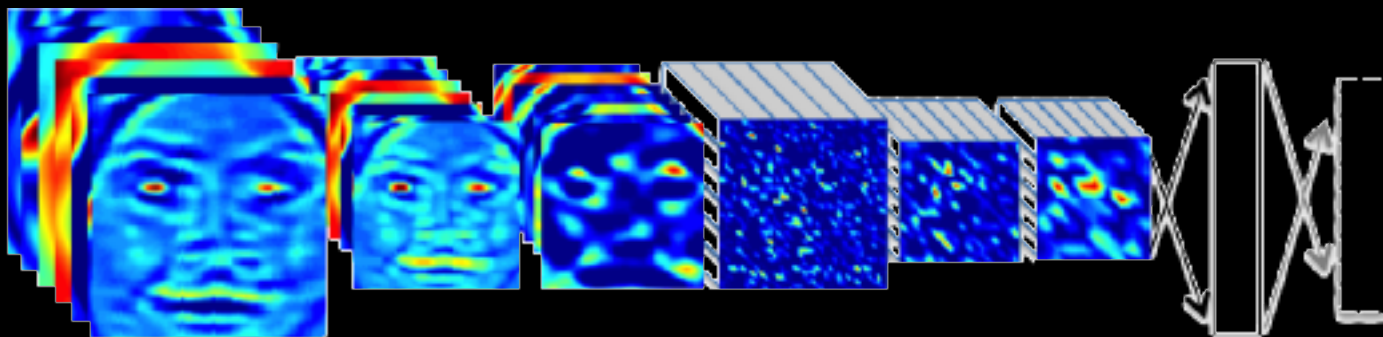
$$\frac{\mathrm{d}f(x)}{\mathrm{d}x}$$

$$\int f(x)p(x)\mathrm{d}x$$

$$A = U - TS$$

Thank you

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MARS