From rules to compression

to thinking

From Instructions to AI

HUGE CONCEPT 1

All computers do is math
(we did this with binary)

HUGE CONCEPT 2

All computers do is follow a very precise list of instructions that one or more people wrote.

Understanding Power

```
10 PRINT “John is AWESOME”;
20 GOTO 10
```

Teaching the robots to escape

1) If there's a door in arms-reach, exit – you're done, else

2) If you can, take one step forward then goto 1), else

3) Rotate to the left until there's not a wall in front of you then goto 1)

(this will get you out of any “regular” empty room)

An almost random bit on recursion

- In computers, it's actually okay to define something with itself.

  PSUEDOCODE!

  Define function=”EscapeFromRoom”{

  1) If there's a door in arms-reach, exit – you're done, else

  2) If you can, take one step forward then EscapeFromRoom, else

  3) Rotate to the left until there's not a wall in front of you then EscapeFromRoom

  }

  (this will get you out of any “regular” empty room)

Go to the store; if they have 2% lactose free chocolate milk, then get me a carton.

Misusing Power

```
go to the store;

if  [[ they have 2% lactose free
chocolate milk]]

then

      get me a carton.
```

The Magic Genie
Recursion, trees, and "crowdsourcing"

{0) Start with "Is it Batman"?}

1) Ask my (yes/no) questions down the tree

2) If win, "yay"

3) If lose, add/replace new last question to one for which my guess was wrong and her guess was right *(optionally, try to be general or"half-y"?)*

- repeat until genius

The Magic Genie
(can be used for evil too...)

- What about instead of

  “Is your person a DC character?”

  you ask real questions about real people?

  (more on this later, but this demonstrates why surveillance is easy and anonymity is hard.)

Computers don’t do “magic”

Not even A.I.

They just take data and mess around with it.
e.g our “Magic Genie..

Remember:

- We're presuming that:
- - the **local** computer is fast
- and

  - File storage is costly
- - the network is slow

  => thus, small filesizes are better.

File Compression (e.g. ZIP)

- Lossless (or “Perfect”) file compression.

  To make smaller, so as to be able to store more, or send faster.

  But also, to reproduce PERFECTLY.

  (it's not magic)

Consider:

- *“Penelope and Robert Jones Smith went to the car and grabbed the bat and the ball and the chair and the Doritos and Penelope's coat and Robert Jones Smith's favorite suit and the directions to the park. Penelope told Robert Jones Smith that they and the other people were going to have a wonderful and fun and lovely day. Robert Jones Smith told Penelope that he agreed. Also, that her name started with P.”*

  (413)

First step:

- Turn all the ands into &.

- *Penelope & Robert Jones Smith went to the car & grabbed the bat & the ball & the chair & the Doritos & Penelope's coat & Robert Jones Smith's favorite suit & the directions to the park. Penelope told Robert Jones Smith that they & the other people were going to have a wonderful & fun & lovely day. Robert Jones Smith told Penelope that he agreed. Also, that her name started with P*.

  -

  &→and

  (394)

But this doesn't have to read like English...

Penelope & Robert Jones Smith went to # car & grabbed # bat & # ball & # chair & # Doritos & Penelope's coat & Robert Jones Smith's favorite suit & # directions to # park. Penelope told Robert Jones Smith that #y & # o#r people were going to have a wonderful & fun & lovely day. Robert Jones Smith told Penelope that he agreed. Also, that her name started with P.

&->and

#→the

(379)

Robert has a long name...

Penelope & RJS went to # car & grabbed # bat & # ball & # chair & # Doritos & Penelope's coat & RJS's favorite suit & # directions to # park. Penelope told RJS that #y & # o#r people were going to have a wonderful & fun & lovely day. RJS told Penelope that he agreed. Also, that her name started with P.

&->and

#->the

RJS->Robert Jones Smith

(344)

Penelope too, but wait...

- “Also, that her name started with P”

Penelope too, but wait...

- “Also, that her name started with P”

  →

  “Also, that her name started with Penelope”

So, then...

- P & RJS went to # car & grabbed # bat & # ball & # chair & # Doritos & P's coat & RJS's favorite suit & # directions to # park. P told RJS that #y & # o#r people were going to have a wonderful & fun & lovely day. RJS told P that he agreed. Also, that her name started with PP.
  &->and
- #->the
- RJS->Robert Jones Smith
- P→Penelope \ PP→P

  (337)

But what if the next file is?

“My favorite letter? P
P all day

Man I love the P
Gonna say it a bunch
P P P P P P P P P P P P P P P P P P P P”

110

But what if the next file is?

“My favorite letter? PP
PP all day

Man I love # PP

PP & PP & PP
Gonna say it a bunch
PP PP PP PP PP PP PP PP PP PP PP PP PP PP PP
PP PP PP PP PP”

(140)

Again, there is no magic

There is NO LOSSLESS compression that makes EVERY example smaller;

All lossless compression has at least one “file” that will get BIGGER.

Pictures on the web:

- Basically, two formats:

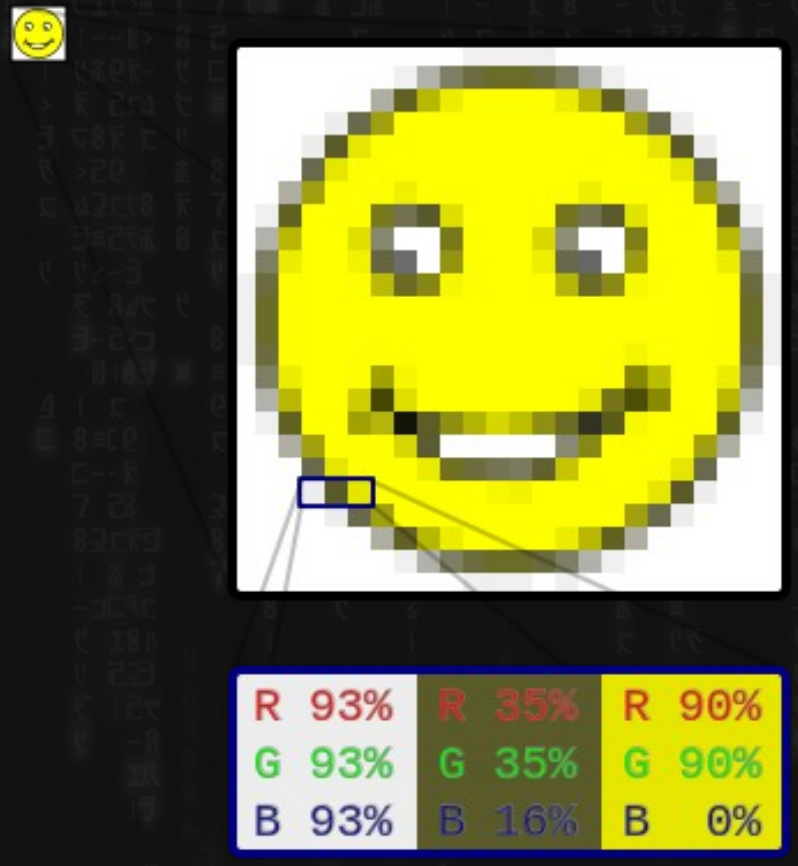
  Raster and Vector.

  Most of the time you're looking at RASTER, which is basically a grid*

  *kinda

Pictures on the web:

Lossless (RAW) Raster



But this math ain’t mathin

1920x1080 = 2 million

2million X 8 colors = 2 MB (megabytes) ?

3480 x 2160 = 8 million

only 8 colors would be 8 megabytes

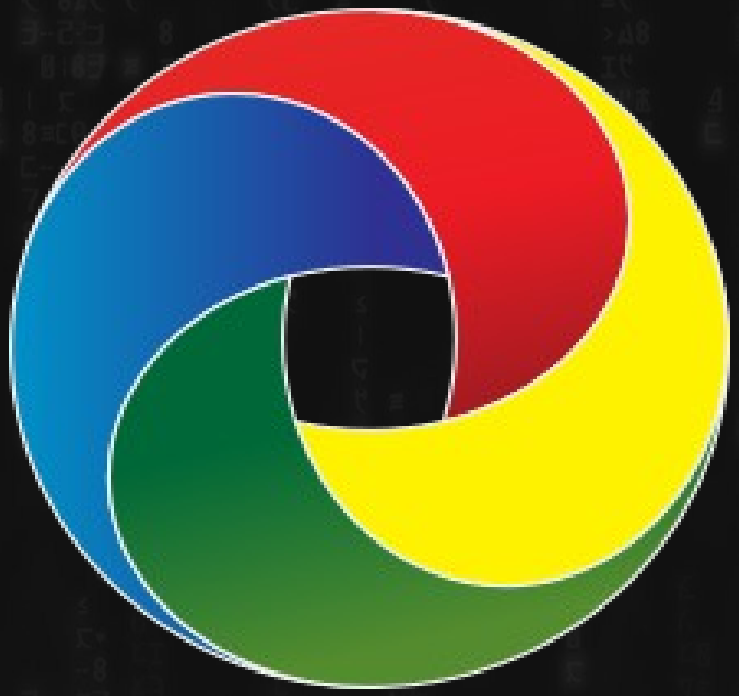
but we don’t use 8 colors

WE USE 16 MILLION?

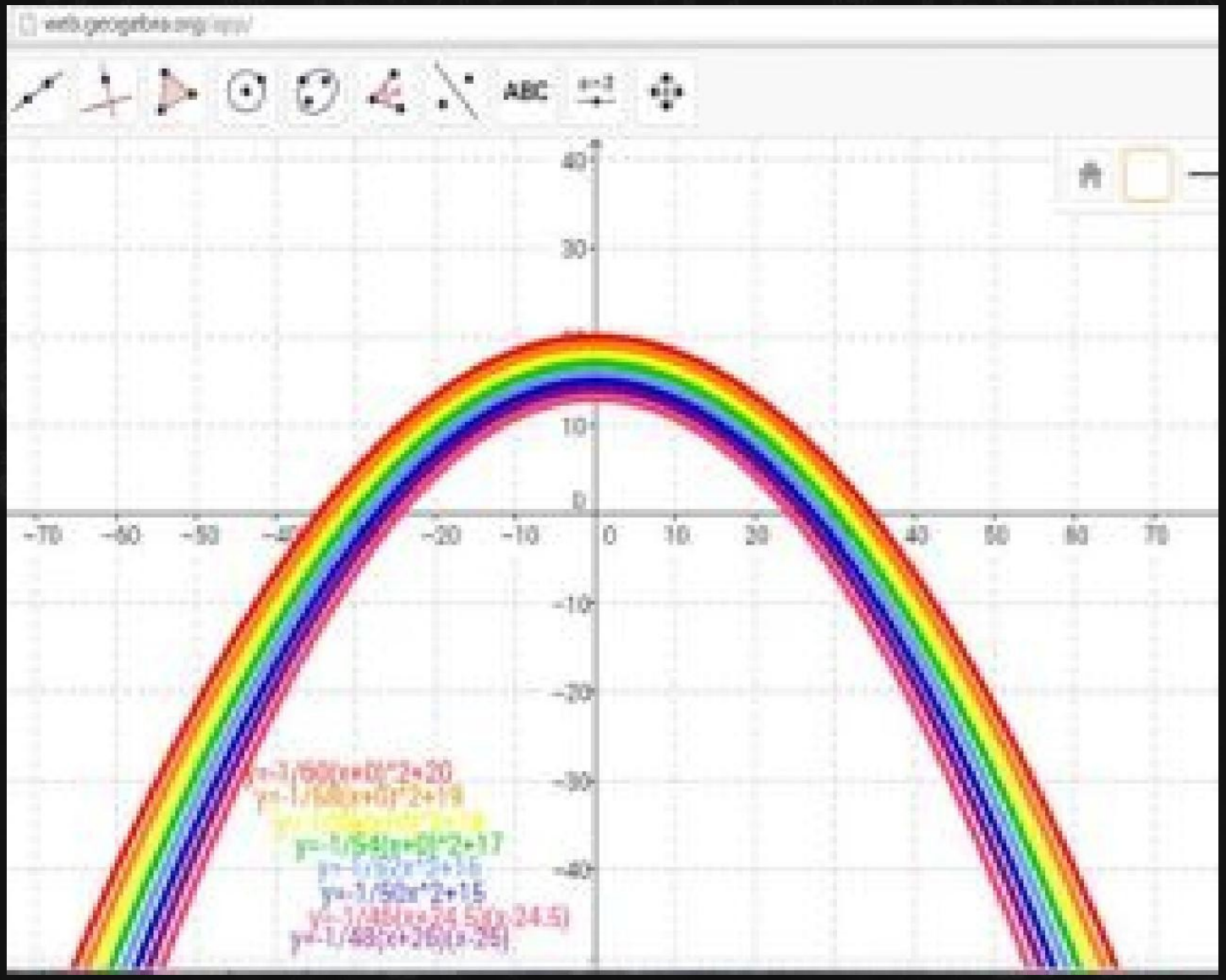
#ABCDEF

Vector Graphics

- Use math (specifically, geometry) to tell the computer how to draw the lines and do the colors – then render it somehow

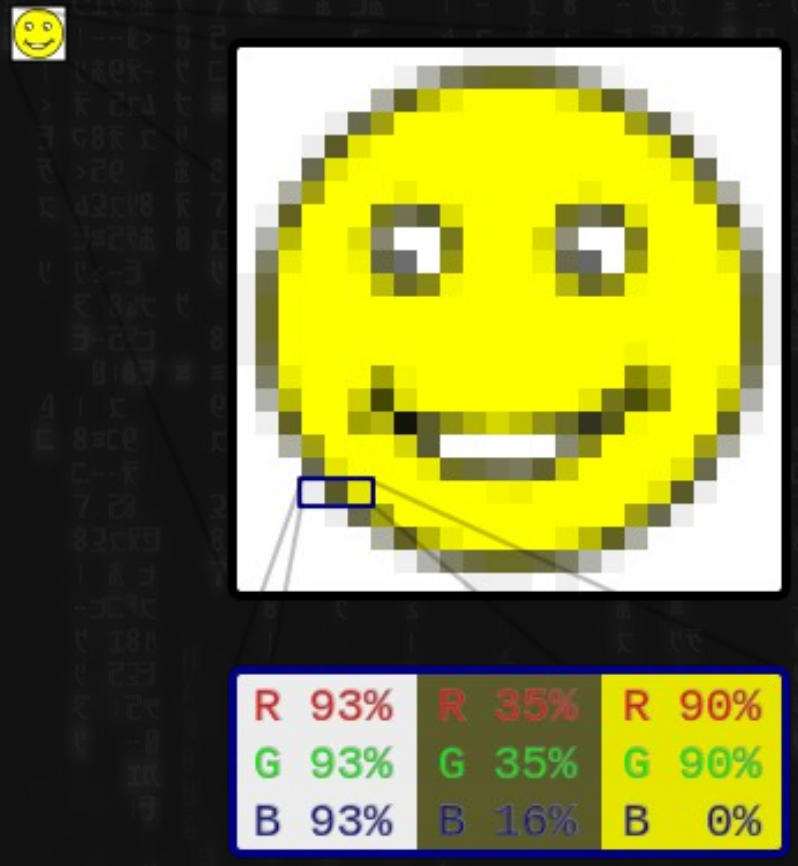


Pictures on the web:



Pictures on the web:

Lossless (RAW) Raster



Lossless image compression

- Instead of
  “0,0 = white 0,5 = white
- 0,1 = white 0,6 = white
- 0,2 = white 0,7 = white
- 0,3 = white 0,8 = white
- 0,4 = white 0,9 = white”...

Just say..

-
- 0,0 through 0, 10 = white.

This also works for audio...

1 sec. = silence

- 2 sec. = silence
- 3 sec. = silence....etc

just say

1-10 sec. = silence

..and video

“at 0,0 for 10 seconds = white”

But without getting into detail

- This math still ain’t mathin

  Let’s take advantage of the fact that we are analogue:

Lossy Compression

EVEN better, for us humans.

We can’t see or hear tiny differences, so this is very good for e.g. pictures/video/sound.

Lossy compression = Good for analogue/multimedia

Tiny filesizes; takes advantage of the limitations in human perception.

We cannot percieve individual pixels (or samples) when surrounded by other meaningful pixels/samples. They blur, frequently in predictable patterns.

“Goldilocks and the 3 bears” (with lossy compression)

-
-
- Some nosey girl went up in some bears' house, ate their food, fell asleep and freaked out when the bears came back.

- “if 0,0 is white, 0,1 is likely to be white, or light gray”

  “if 0,1 is light gray, 0,2 is likely to be slightly darker gray…”

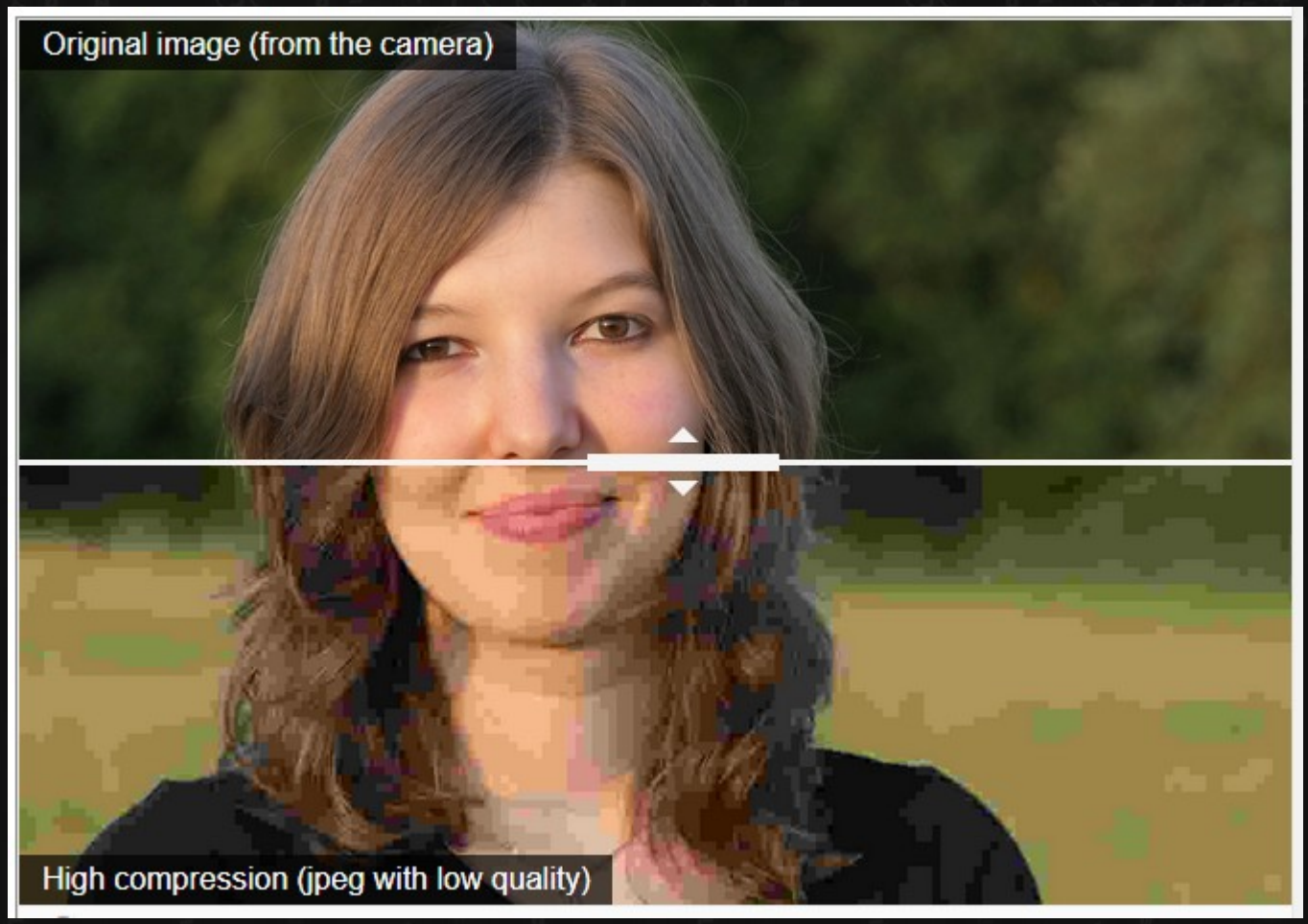
  Okay, so just (x + 1) the darkness every pixel to the left.

  y=x+1

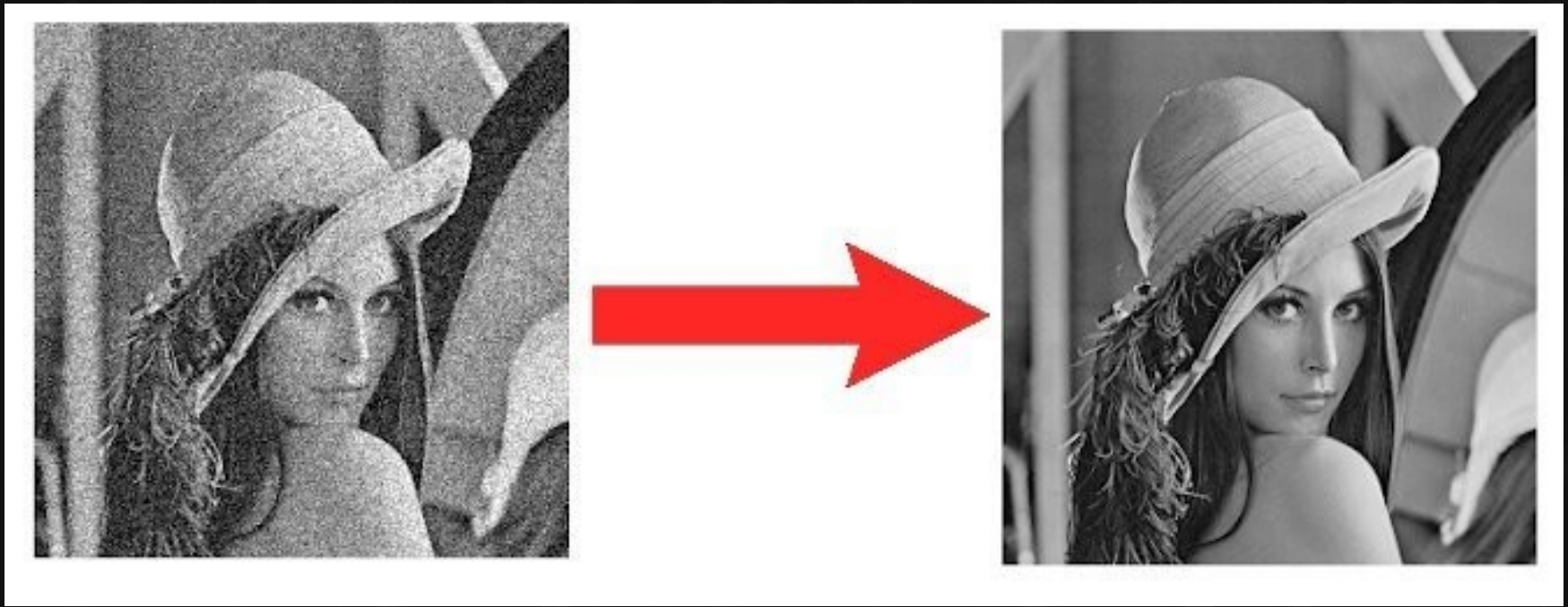
- What happens if you compress something losslessly over and over?

  What happens if you compress something lossi-ly over and over?

- ?


Original image (from the camera)
High compression (jpeg with low quality)

Can also “fix” images ”denoising”



Smart people terms

How to store knowledge:

I’m going to put the number PI on the next slide.

the whole thing

Seriously

Smart people terms

”The ratio of a circle’s circumference to its diameter”

BOOM.

Kolmogorov Complexity

Basically “what do you need to completely describe the thing.”

Stored as a numeral, Pi, is infinitely ‘complex’

But it’s not “Kolmogorov Complex” at all.

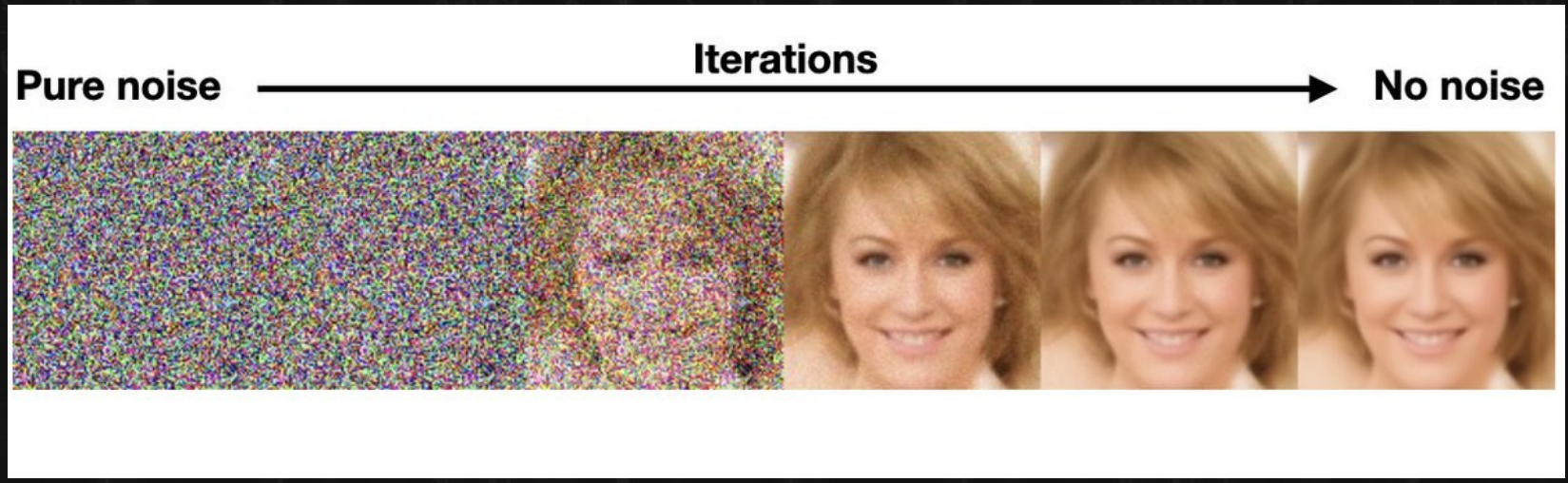
Lets try something

1. Get every image on the internet that has words.
2. Deliberately add noise to them and tell the computer to watch for math patterns

Now do that backwards

3. Take words, e.g. “womans face,”
then “denoise” according to what you learned by mathematically analyzing

(this is AI art)



Okay, AI

First, lets try words.

This is actually not hard...

You could literally just do random words..but that’s not great…

Fill in the blank.

Seven _____?

Fill in the blank.

Seven _____?

Seas?
Continents?
Nation Army?

Sure, pick one, sometimes randomly.

Fill in the blank.

Four Score and Seven _____?

Again, not hard.

The computer just picks the one (or one of the ones) that usually follows FROM THE DATA IT SEES.

By the way

Remember “the” and & et al from before?

The text AI’s mostly don’t use words, but “tokens”

Not too different from our magic genie

Just a series of choices/options.

AI

Lots of moved goalposts
- chess
- basic questions
TURING COMPLETENESS

Big Picture Ideas

Some have moved from “AI”
to
”AGI”
”Artificial General Intelligence”

Big Picture Ideas

”The Singularity”

The point at which AI intelligence surpasses ours, and therefore there’s literally no point in trying to think about after that...


BostonDynamics

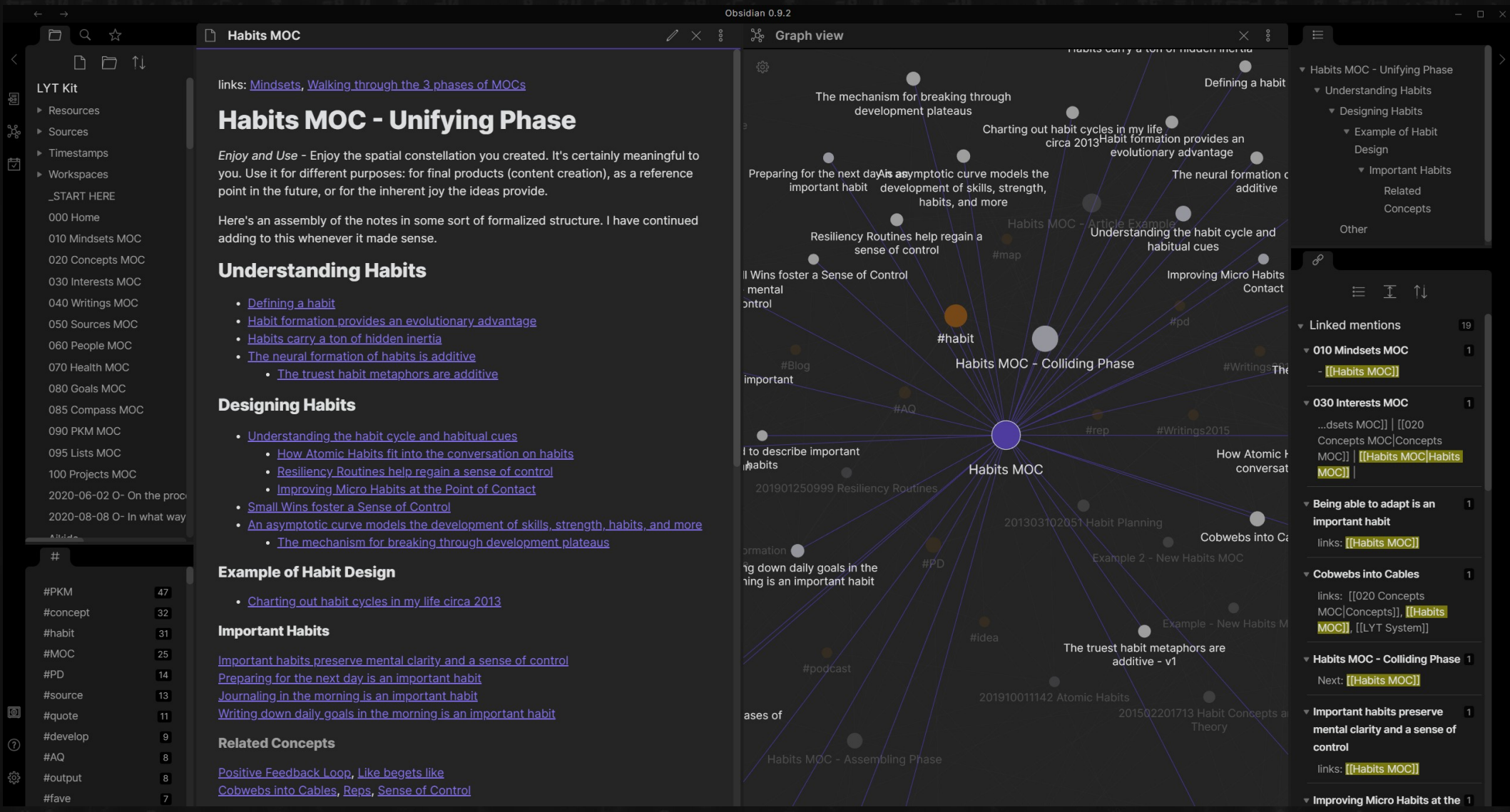
Literally just my opinion, but: meh.

After YEARS of doing
“todo/ideas/2nd brain stuff”

I’ve landed on some conclusions:

We can think; the computers can just “play back” what we’ve done.

That’s ALL.


Obsidian 0.9.2
LYT Kit
Resources
Sources
Timestamps
Workspaces
_START HERE
000 Home
010 Mindsets MOC
020 Concepts MOC
030 Interests MOC
040 Writings MOC
050 Sources MOC
060 People MOC
070 Health MOC
080 Goals MOC
085 Compass MOC
090 PKM MOC
095 Lists MOC
100 Projects MOC
2020-06-02 O- On the proc
2020-08-08 O- In what way
#PKM 47
#concept 32
#habit 31
#MOC 25
#PD 14
#source 13
#quote 11
#develop 9
#AQ 8
#output 8
#fave 7
Habits MOC
links: Mindsets, Walking through the 3 phases of MOCs
Habits MOC - Unifying Phase
Enjoy and Use - Enjoy the spatial constellation you created. It's certainly meaningful to you. Use it for different purposes: for final products (content creation), as a reference point in the future, or for the inherent joy the ideas provide.
Here's an assembly of the notes in some sort of formalized structure. I have continued adding to this whenever it made sense.
Understanding Habits
Defining a habit
Habit formation provides an evolutionary advantage
Habits carry a ton of hidden inertia
The neural formation of habits is additive
The truest habit metaphors are additive
Designing Habits
Understanding the habit cycle and habitual cues
How Atomic Habits fit into the conversation on habits
Resiliency Routines help regain a sense of control
Improving Micro Habits at the Point of Contact
Small Wins foster a Sense of Control
An asymptotic curve models the development of skills, strength, habits, and more
The mechanism for breaking through development plateaus
Example of Habit Design
Charting out habit cycles in my life circa 2013
Important Habits
Important habits preserve mental clarity and a sense of control
Preparing for the next day is an important habit
Journaling in the morning is an important habit
Writing down daily goals in the morning is an important habit
Related Concepts
Positive Feedback Loop, Like begets like
Cobwebs into Cables, Reps, Sense of Control
Graph view
The mechanism for breaking through development plateaus
Defining a habit
Charting out habit cycles in my life circa 2013
Habit formation provides an evolutionary advantage
Preparing for the next day is an important habit
An asymptotic curve models the development of skills, strength, habits, and more
The neural formation of additive
Habits MOC - Article Example
Resiliency Routines help regain a sense of control
Understanding the habit cycle and habitual cues
#map
Improving Micro Habits Contact
#habit
Habits MOC - Colliding Phase
#pd
#Blog
#Writings
#AQ
#rep
#Writings2015
Habits MOC
How Atomic H conversat
201901250999 Resiliency Routines
201303102051 Habit Planning
Cobwebs into Ca
#PD
Example 2 - New Habits MOC
Example - New Habits M
#idea
The truest habit metaphors are additive - v1
#podcast
201910011142 Atomic Habits
201502201713 Habit Concepts a Theory
Habits MOC - Assembling Phase
Habits MOC - Unifying Phase
Understanding Habits
Designing Habits
Example of Habit Design
Important Habits
Related Concepts
Other
Linked mentions 19
010 Mindsets MOC 1
- [[Habits MOC]]
030 Interests MOC 1
...dsets MOC]] | [[020 Concepts MOC|Concepts MOC]] | [[Habits MOC|Habits MOC]] |
Being able to adapt is an important habit 1
links: [[Habits MOC]]
Cobwebs into Cables 1
links: [[020 Concepts MOC|Concepts]], [[Habits MOC]], [[LYT System]]
Habits MOC - Colliding Phase 1
Next: [[Habits MOC]]
Important habits preserve mental clarity and a sense of control 1
links: [[Habits MOC]]
Improving Micro Habits at the 1

Looks cool. Appealing.

but IMHO, our brains are WAY better at this part. Kinda pointless.

The computers ARE good at “repeating verbatim,” tho