

Introduction to Artificial Intelligence and Machine Learning

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Hello, presentations and what we will do here!!

- ▶ Tell us who you are, what you are working on, and what you hope to get out of the week.
- ▶ What are Intelligence, Artificial Intelligence, and Machine Learning.
- ▶ Where are these things being used? Why?
- ▶ PLaying around with AI and ML.
- ▶ If you want to know what a brain is, you should build one!!
- ▶ The brain: learning how to learn, focus, and diffuse modes of the brain, neurons, and neuron networks.
- ▶ Beyond the games!!
- ▶ Step by Step example of application. How the banks make money and help people.

What are Intelligence, Artificial Intelligence, and Machine Learning.

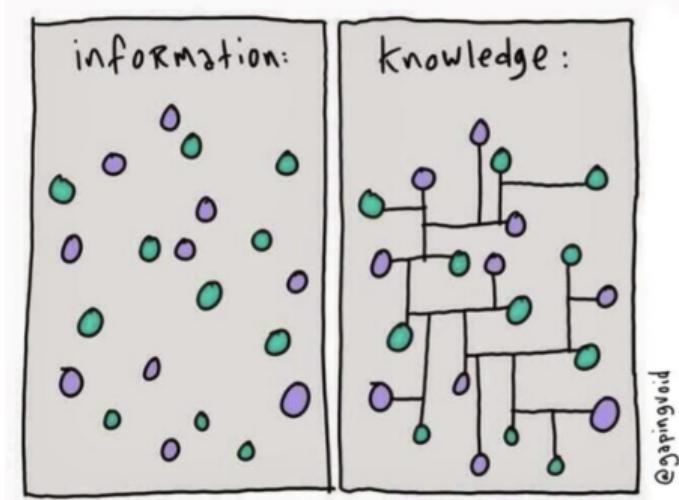


Figure 1:

Intelligence: convert information into knowledge. Source: <https://thoughtcatalog.com>



Figure 2:

Artificial Intelligence. Source: <https://www.teachingtimes.com>

What are Intelligence, Artificial Intelligence, and Machine Learning.

Trait 1	—	Trait 2	Genotype	SNP ID
x1	—	x2	1	—
x2	—	x3	2	—
x3	—	x4	3	—
x4	—	x5	4	—
x5	—	x6	5	—
x6	—	x7	6	—
x7	—	x8	7	—
x8	—	x9	8	—
x9	—	x10	9	—
x10	—	x11	10	—
x11	—	x12	11	—
x12	—	x13	12	—
x13	—	x14	13	—
x14	—	x15	14	—
x15	—	x16	15	—
x16	—	x17	16	—
x17	—	x18	17	—
x18	—	x19	18	—
x19	—	x20	19	—
x20	—	x21	20	—
x21	—	x22	21	—
x22	—	x23	22	—
x23	—	x24	23	—
x24	—	x25	24	—
x25	—	x26	25	—
x26	—	x27	26	—
x27	—	x28	27	—
x28	—	x29	28	—
x29	—	x30	29	—
x30	—	x31	30	—
x31	—	x32	31	—
x32	—	x33	32	—
x33	—	x34	33	—
x34	—	x35	34	—
x35	—	x36	35	—
x36	—	x37	36	—
x37	—	x38	37	—
x38	—	x39	38	—
x39	—	x40	39	—
x40	—	x41	40	—
x41	—	x42	41	—
x42	—	x43	42	—
x43	—	x44	43	—
x44	—	x45	44	—
x45	—	x46	45	—
x46	—	x47	46	—
x47	—	x48	47	—
x48	—	x49	48	—
x49	—	x50	49	—
x50	—	x51	50	—
x51	—	x52	51	—
x52	—	x53	52	—
x53	—	x54	53	—
x54	—	x55	54	—
x55	—	x56	55	—
x56	—	x57	56	—
x57	—	x58	57	—
x58	—	x59	58	—
x59	—	x60	59	—
x60	—	x61	60	—
x61	—	x62	61	—
x62	—	x63	62	—
x63	—	x64	63	—
x64	—	x65	64	—
x65	—	x66	65	—
x66	—	x67	66	—
x67	—	x68	67	—
x68	—	x69	68	—
x69	—	x70	69	—
x70	—	x71	70	—
x71	—	x72	71	—
x72	—	x73	72	—
x73	—	x74	73	—
x74	—	x75	74	—
x75	—	x76	75	—
x76	—	x77	76	—
x77	—	x78	77	—
x78	—	x79	78	—
x79	—	x80	79	—
x80	—	x81	80	—
x81	—	x82	81	—
x82	—	x83	82	—
x83	—	x84	83	—
x84	—	x85	84	—
x85	—	x86	85	—
x86	—	x87	86	—
x87	—	x88	87	—
x88	—	x89	88	—
x89	—	x90	89	—
x90	—	x91	90	—
x91	—	x92	91	—
x92	—	x93	92	—
x93	—	x94	93	—
x94	—	x95	94	—
x95	—	x96	95	—
x96	—	x97	96	—
x97	—	x98	97	—
x98	—	x99	98	—
x99	—	x100	99	—

SNP ID	Sample	Genotype	Allele
1	S1	AA	A
2	S2	AA	A
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4	S4	AA	A
5	S5	AA	A
6	S6	AA	A
7	S7	AA	A
8	S8	AA	A
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10	S10	AA	A
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12	S12	AA	A
13	S13	AA	A
14	S14	AA	A
15	S15	AA	A
16	S16	AA	A
17	S17	AA	A
18	S18	AA	A
19	S19	AA	A
20	S20	AA	A
21	S21	AA	A
22	S22	AA	A
23	S23	AA	A
24	S24	AA	A
25	S25	AA	A
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27	S27	AA	A
28	S28	AA	A
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11	S11	AA	A
12	S12	AA	A
13	S13	AA	A
14	S14	AA	A
15	S15	AA	A
16	S16	AA	A
17	S17	AA	A
18	S18	AA	A
19	S19	AA	A
20	S20	AA	A
21	S21	AA	A
22	S22	AA	A
23	S23	AA	A
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10	S10	AA	A
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12	S12	AA	A
13	S13	AA	A
14	S14	AA	A
15	S15	AA	A
16	S16	AA	A
17	S17	AA	A
18	S18	AA	A
19	S19	AA	A
20	S20	AA	A
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27	S27	AA	A
28	S28	AA	A
29	S29	AA	A
30	S30	AA	A



Machine Learning. Source: google + author

Where are these things being used? Why?



Figure 4:

Applications of ML: Social media and
Streaming Source: <https://google.com>



Figure 5:
Applications of ML: Self driven cars:
<https://www.siliconrepublic.com>

Where are these things being used? Why?

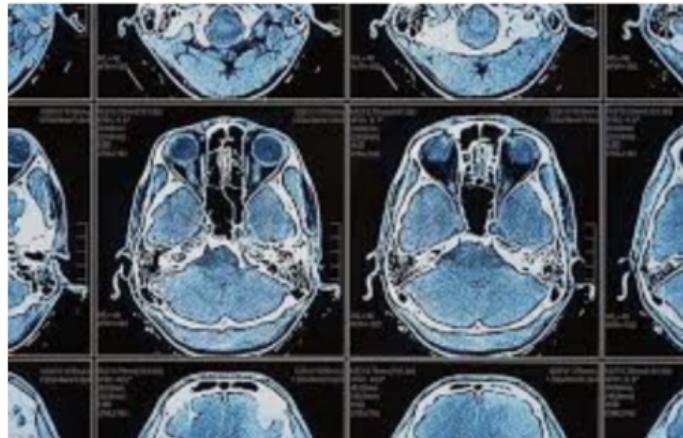


Figure 6:

Applications of ML: Precision Medicine
Source: <https://google.com>



Figure 7:

Applications of ML: Precision Agriculture
Source: <https://google.com>

Using ML for solving a problem: Feeding people and animals.

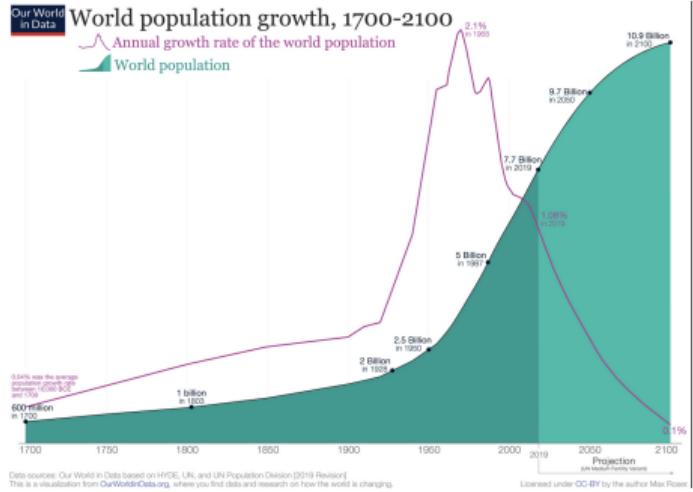


Figure 8:
Human population. Source: Our world in data.

Figure 9:
Food production. Source:
<https://www.hi-in.com>

ML and where does the food come from!

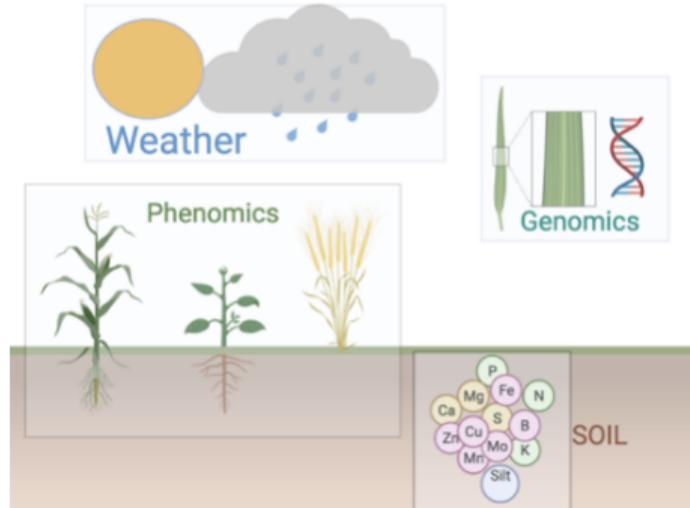


Figure 10:

Plant breeding and agriculture. Source:
The author.



Figure 11:

ML for Agriculture. Source the author.

Google experiments !!!

- ▶ <https://experiments.withgoogle.com/>
- ▶ Chopin explorer.
- ▶ Drawing with draw.
- ▶ Composing with song maker.
- ▶ Knowing boomy.
- ▶ Crazy videos with ML.

Music: Composing with song maker!!!

<https://musiclab.chromeexperiments.com/Song-Maker/>

Music: Composing with AI!!!

<https://boomy.com/>

Challenge:

Compose your own piece of music!!

<https://musiclab.chromeexperiments.com/>

More serious stuff:

<https://experiments.withgoogle.com/assisted-melody>

Some crazy videos ML does for us:

https://www.youtube.com/watch?v=l3C2V6y8AUk&ab_channel=DaniloSarti

[#](https://www.youtube.com/watch?v=qw_k5u_CEKY&ab_channel=DaniloSarti)

If you want to know what a brain is, you should build one!!



Figure 12:
Neuroscience. Source:
Google.



Figure 13:
Brain. Source:
Webcommons.



Figure 14:
Zoombie. Source:
Google.

The brain: learning how to learn, focus, and diffuse modes of the brain, neurons, and neural networks.



Figure 15:

Alien Neuron. Source:
Barbara Oakley LHL.

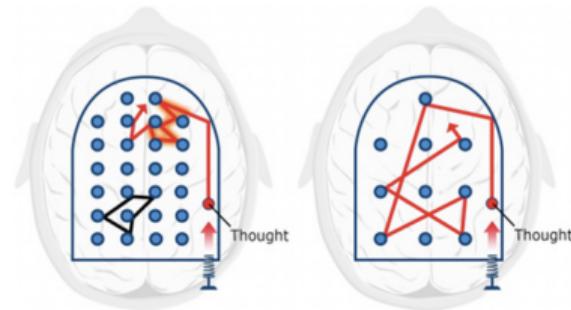


Figure 16:

Modes of the brain.
Source: Barbara Oakley
LHL.

- ▶ 30 Times More Powerful Than The Best Supercomputers

Of pizzas and brain



- Focused work. - Break -
<https://pomofocus.io/>

Figure 17:

Pomodoro. Source: Teamwork.com

Machine Learn learnt from the brain

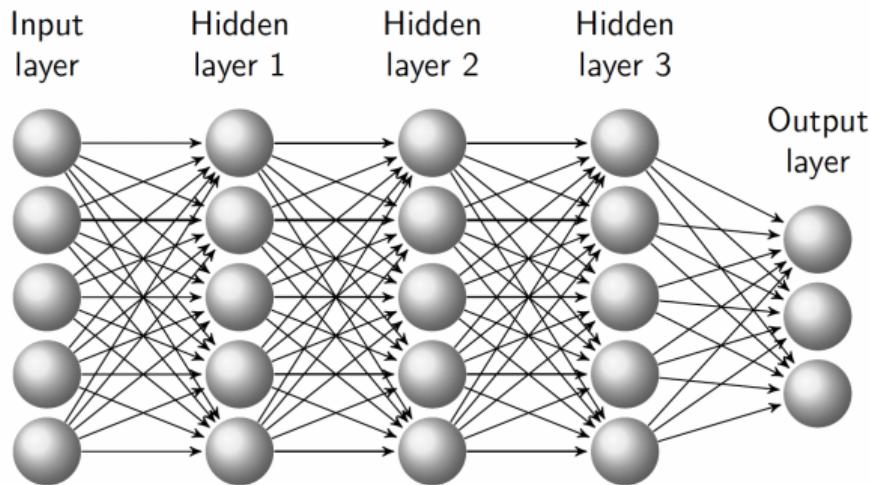


Figure 18:

Pomodoro. Source: Stone 2020

Beyond the games!! Game theory and Algorithmic trading.

Step by Step example of application.