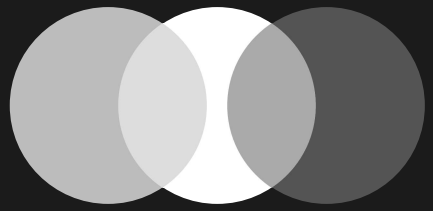


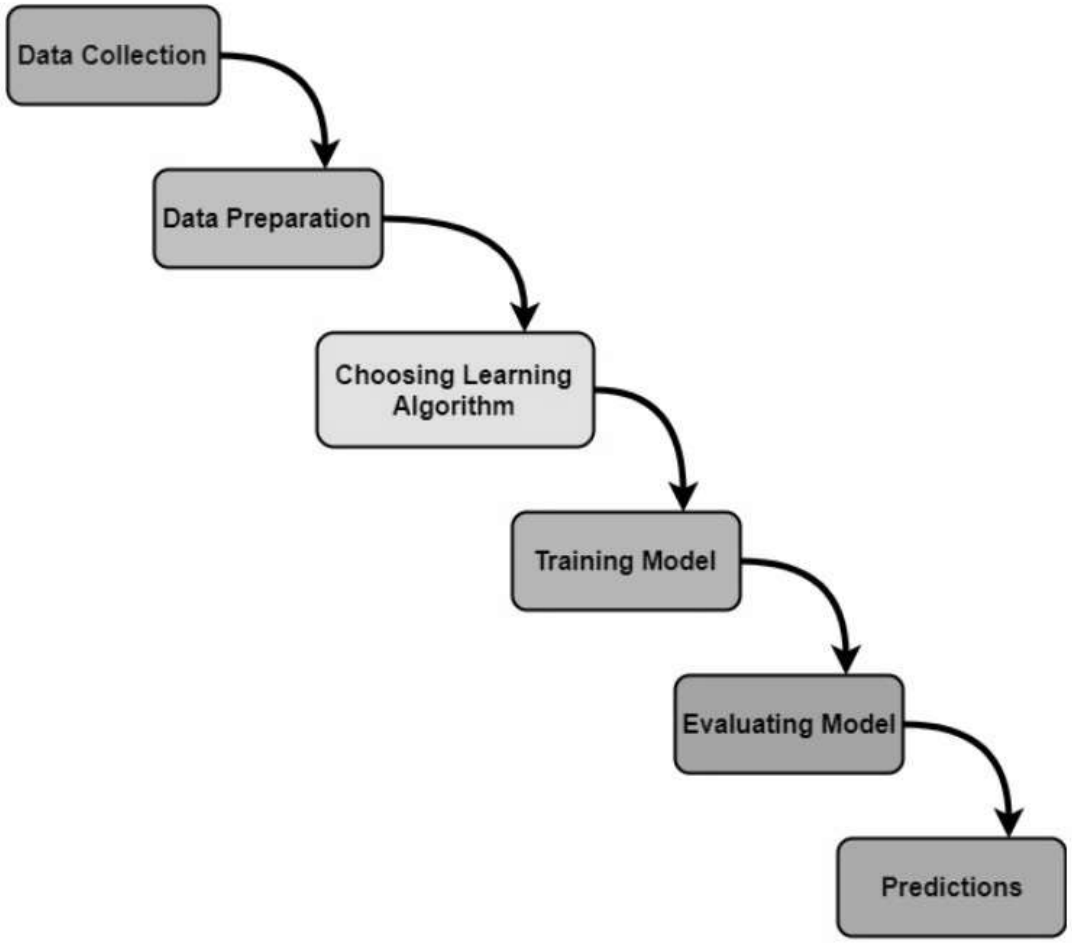
مقدمه ای بر یادگیری عمیق

An Introduction to Deep Learning

dataroadmap

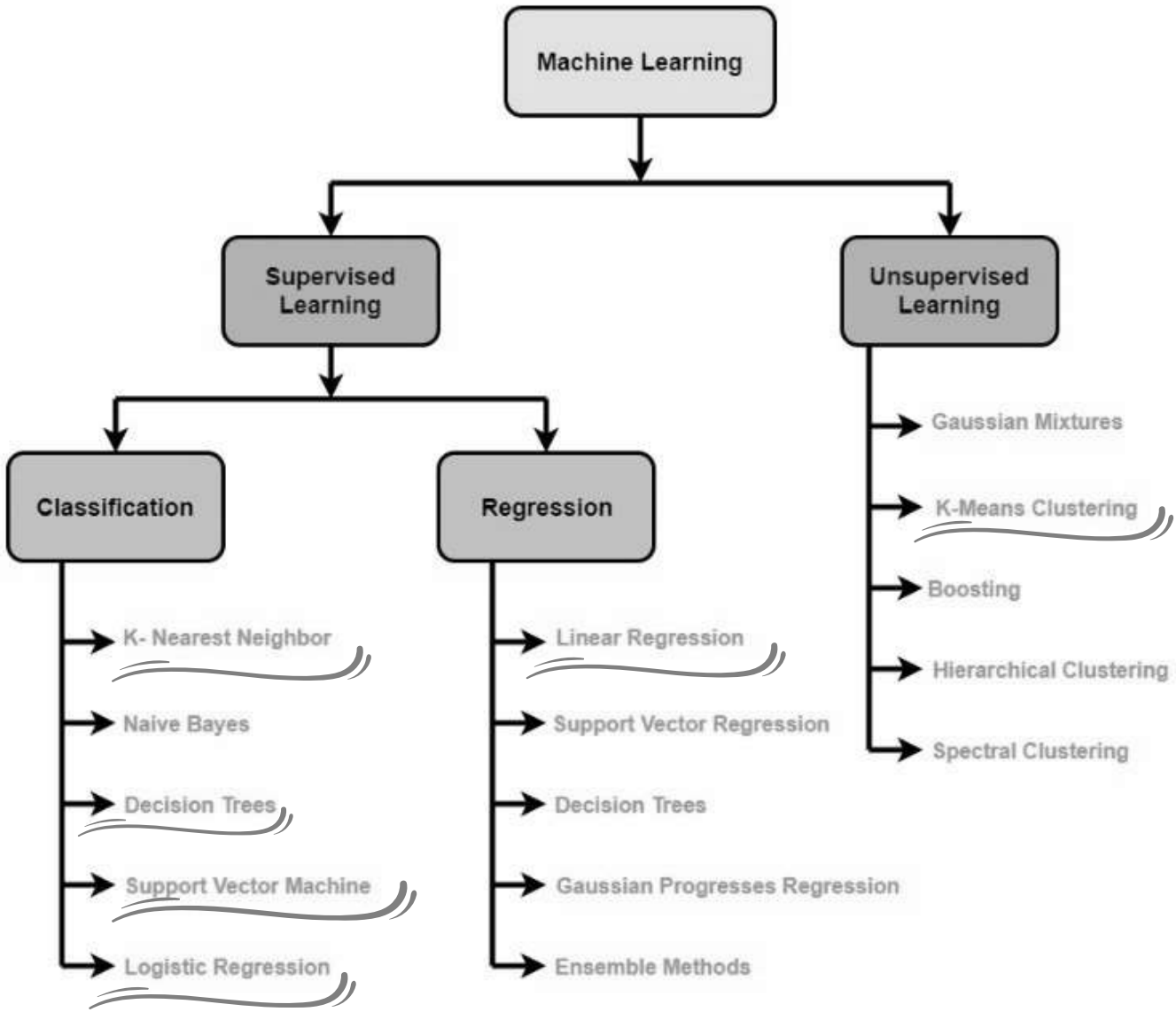
مدرس: مونا حاتمی

Machine Learning Workflow

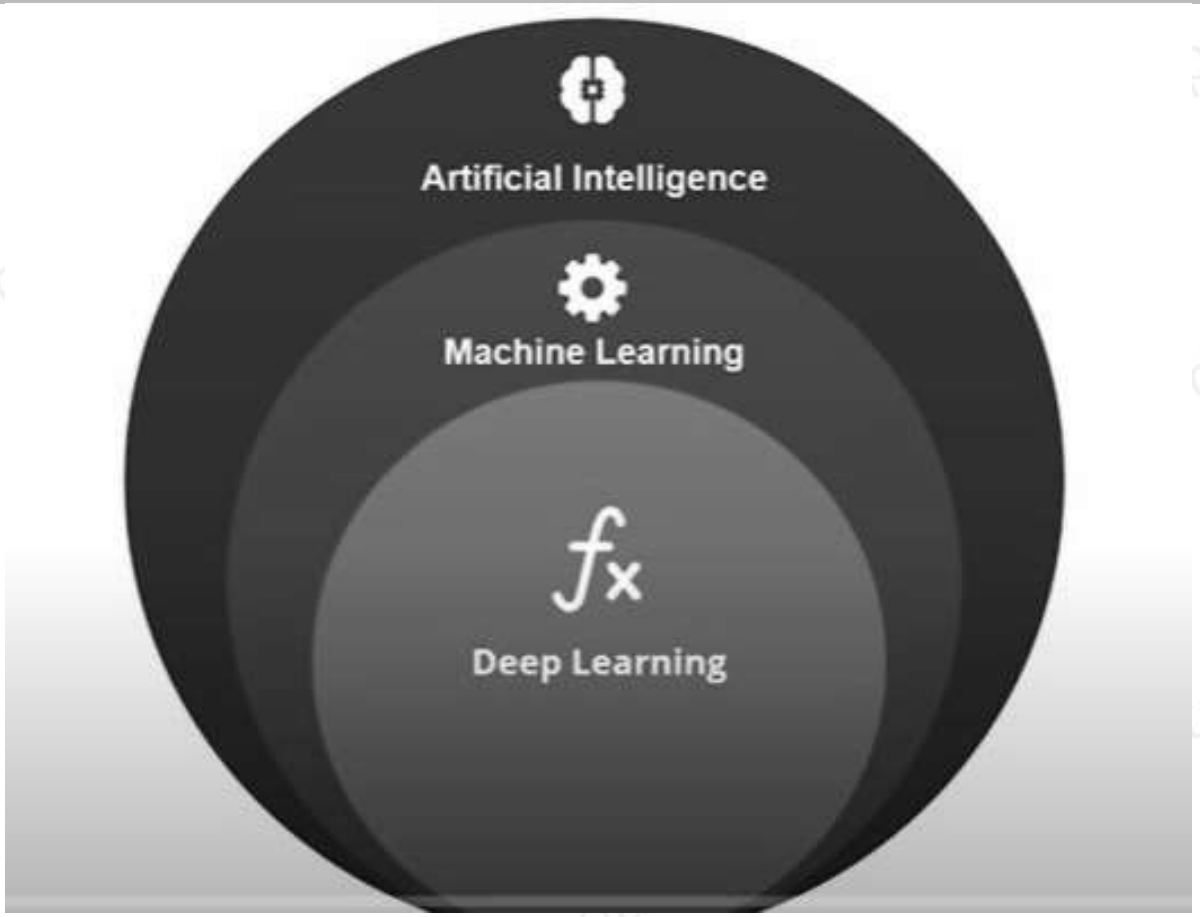


Machine Learning Workflow

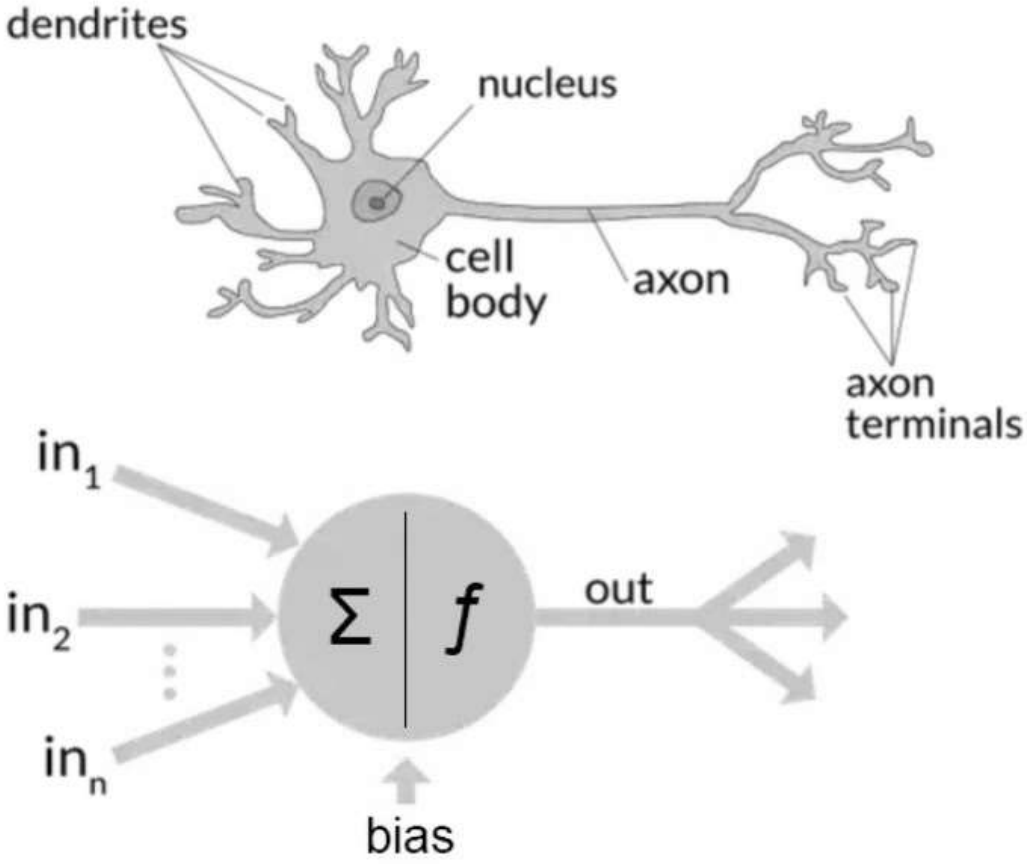
Machine Learning



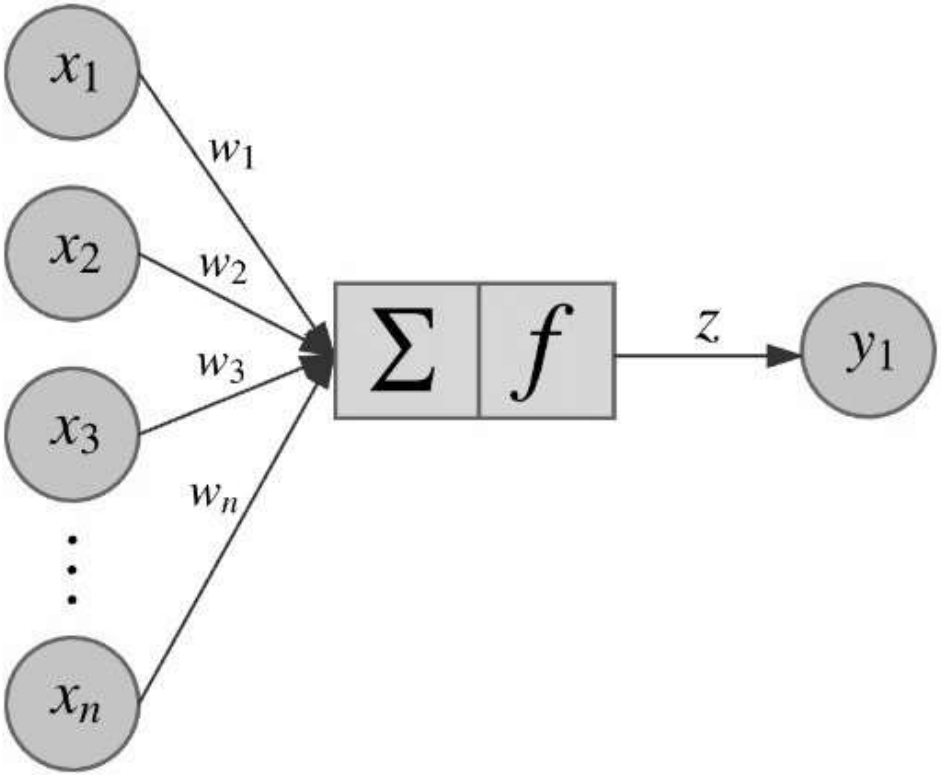
Artificial Intelligence vs Machine Learning vs Deep Learning



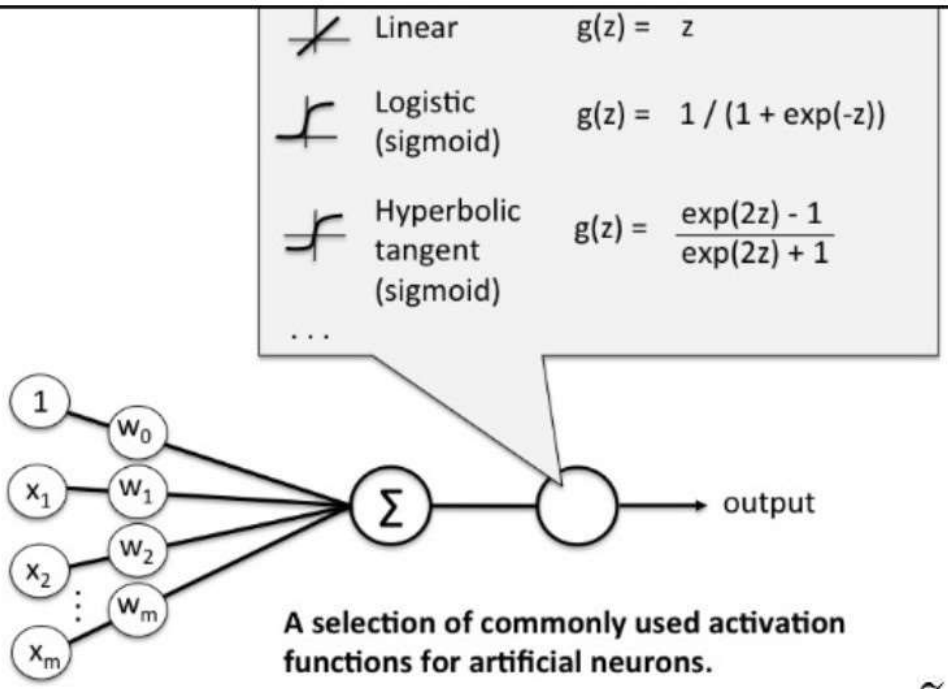
Perceptron


dendrites
nucleus
cell body
axon
axon terminals
in1
in2
inn
Σ
f
out
bias

Perceptron



Activation functions used in Neural Networks

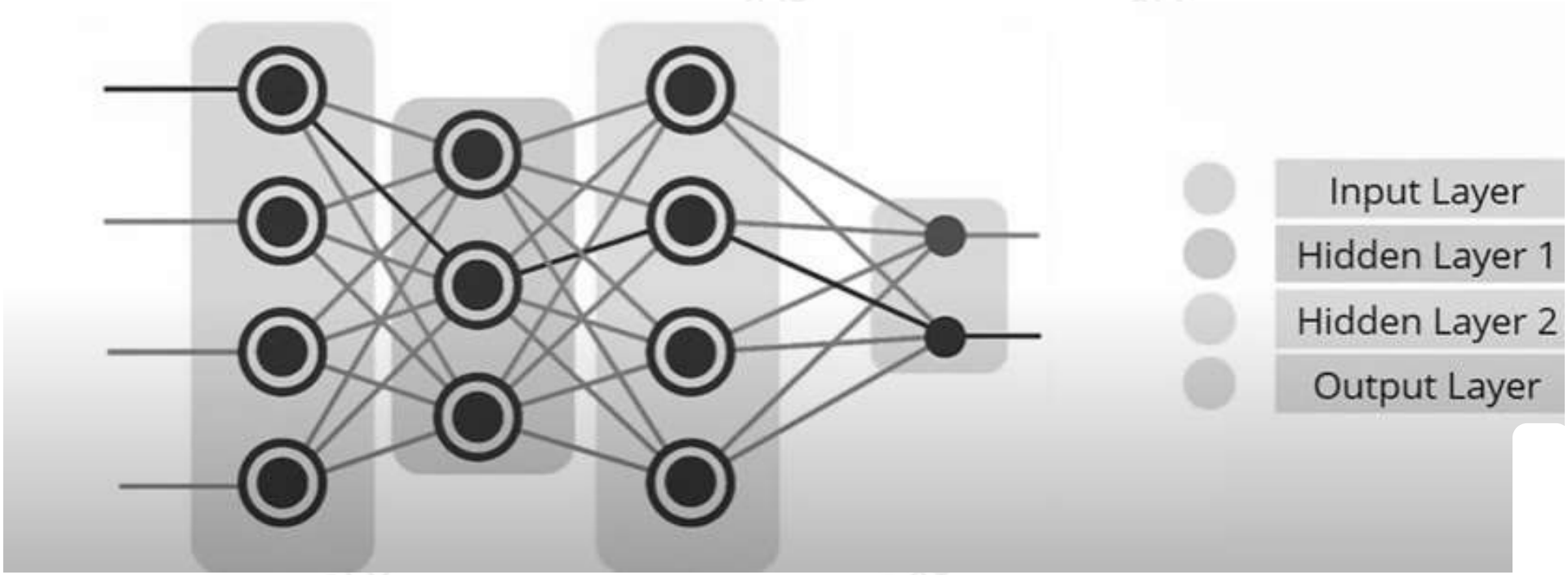


A selection of commonly used activation functions for artificial neurons.

$$z = f(b + x \cdot w) = f\left(b + \sum_{i=1}^{n} x_i w_i\right)$$

dataroadmap

Artificial Neural Network Layers



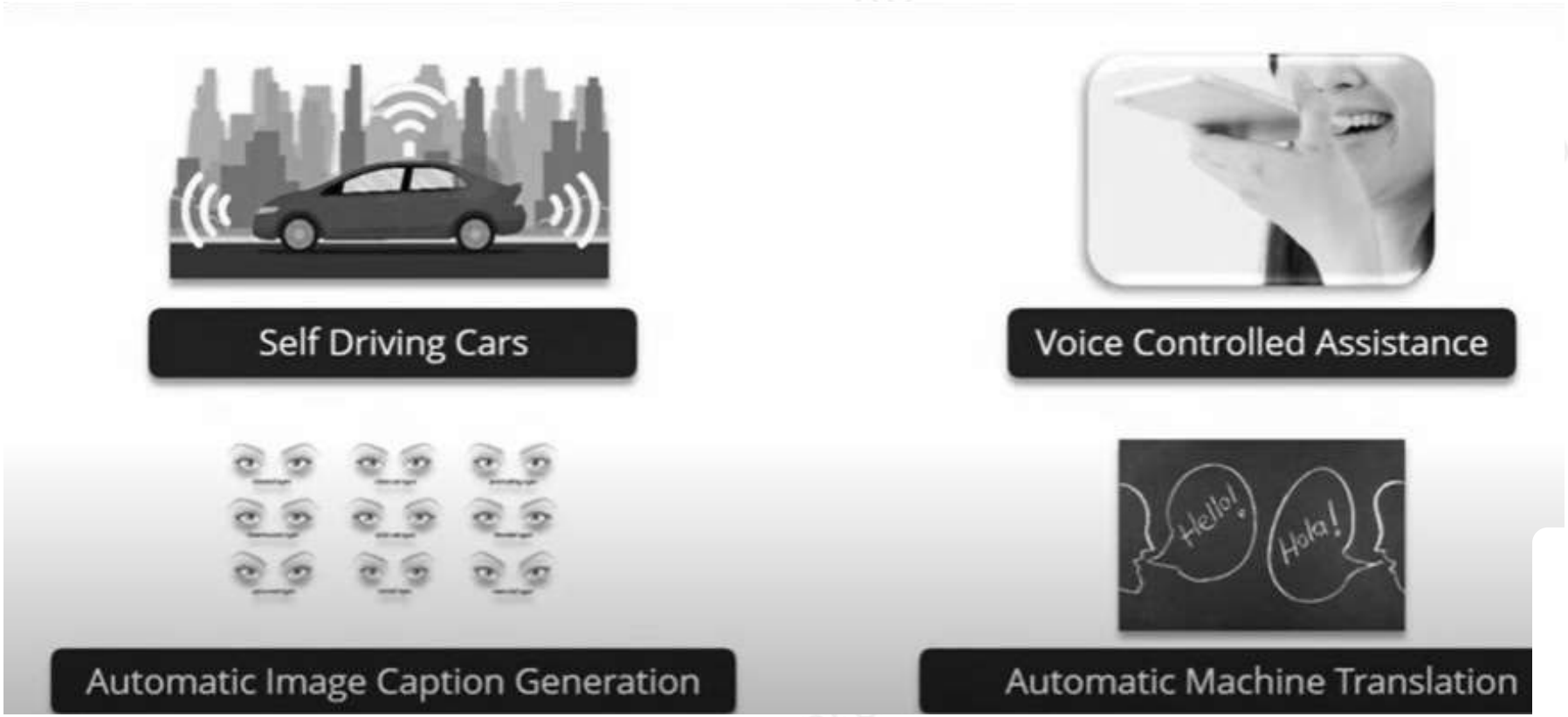
Deep learning libraries

TensorFlow Apache License 2.0	PyTorch BSD licenses	Theano BSD licenses
Chainer MIT License	Dlib	OpenNN GNU Lesser General Public License
Flux MIT License	Apache Spark Apache License	Data Analytics Library Apache License
OpenCV BSD licenses	ML.NET MIT License	Infer.NET MIT License

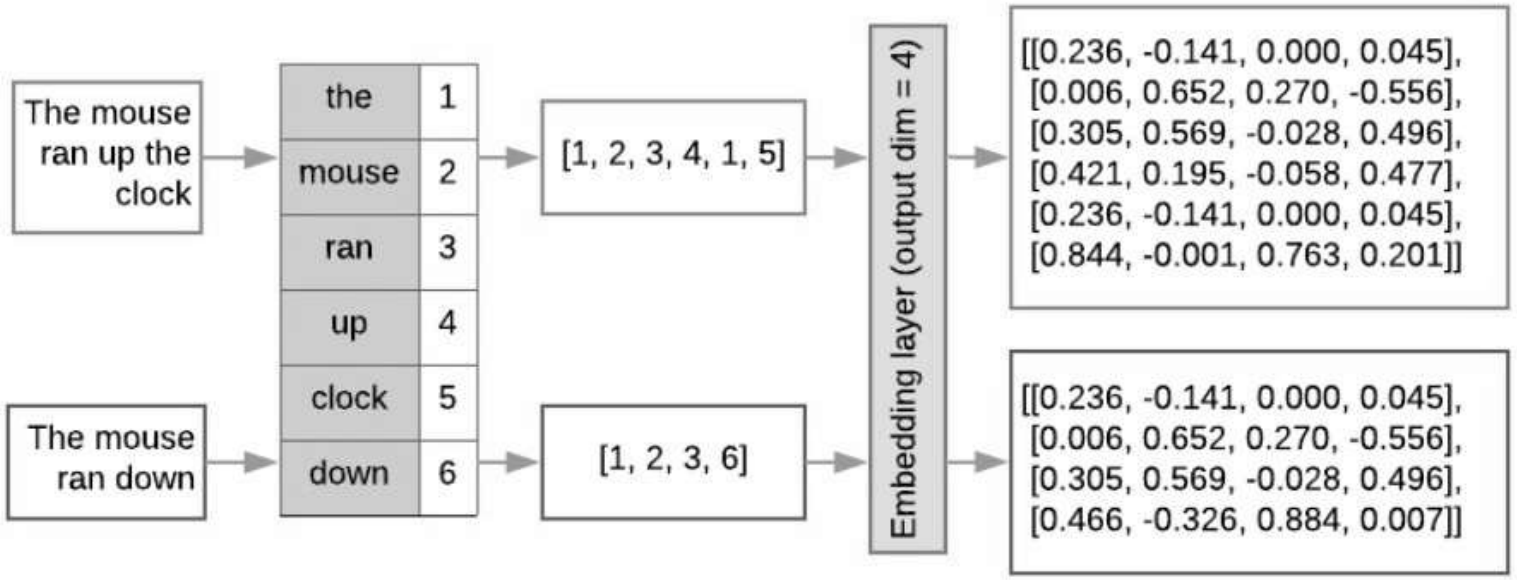
TensorFlow

PyTorch

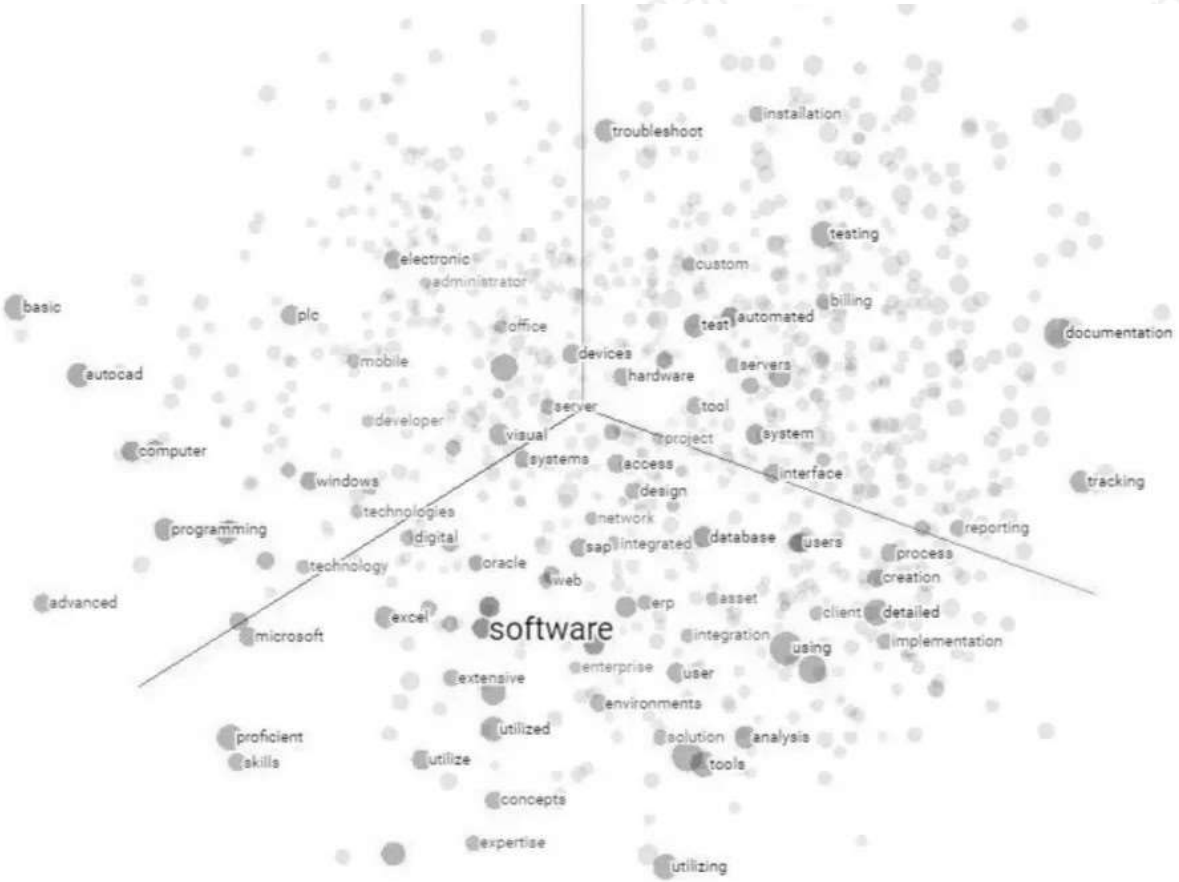
Deep learning applications



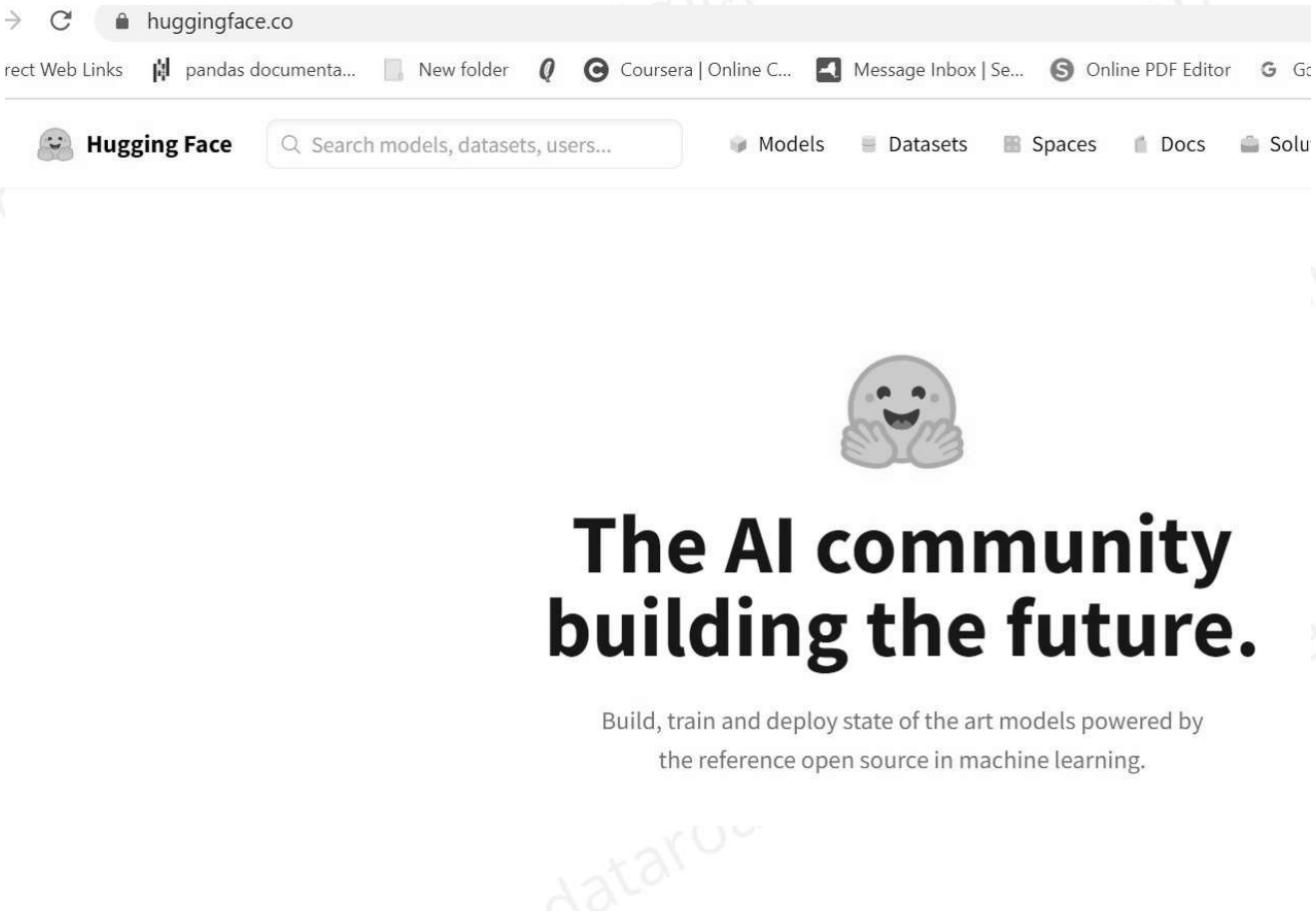
Natural Language Processing (NLP)



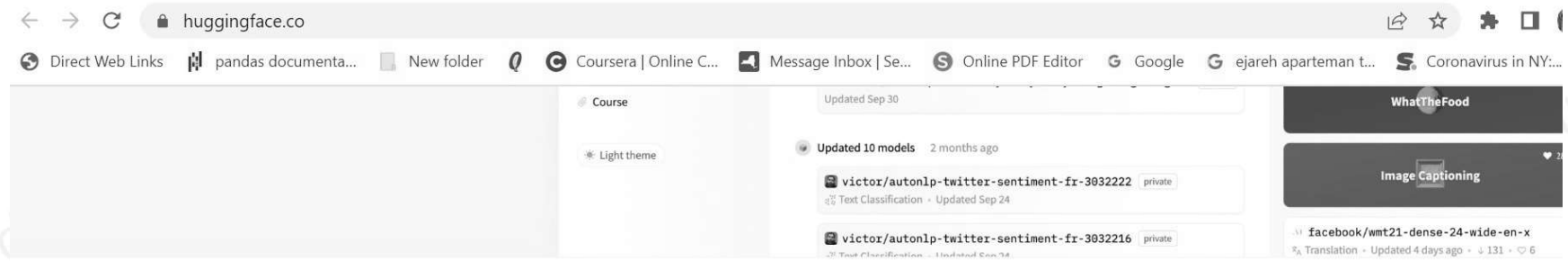
Word Embedding Visualization

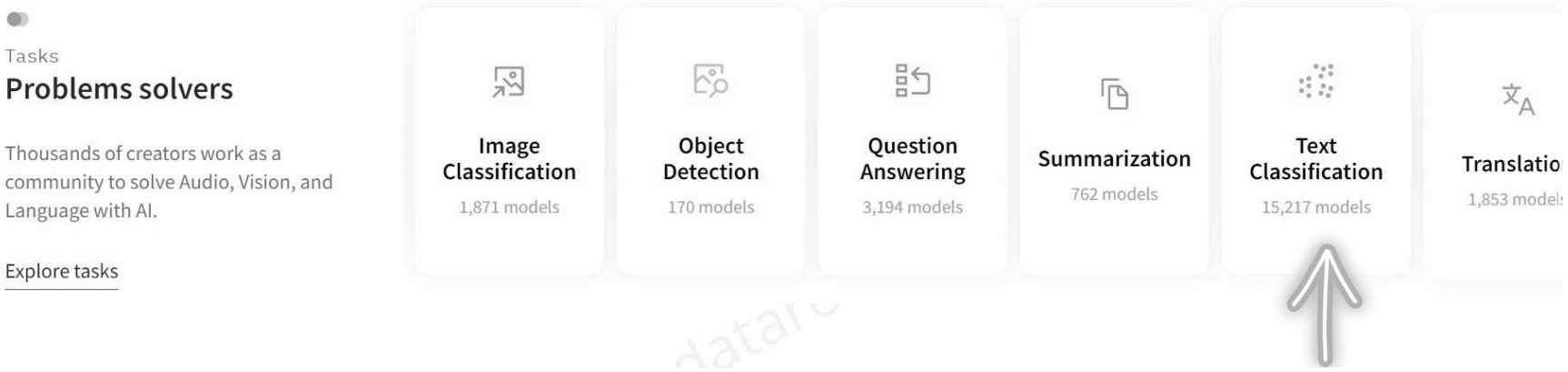


Pre-trained Machine Learning Models

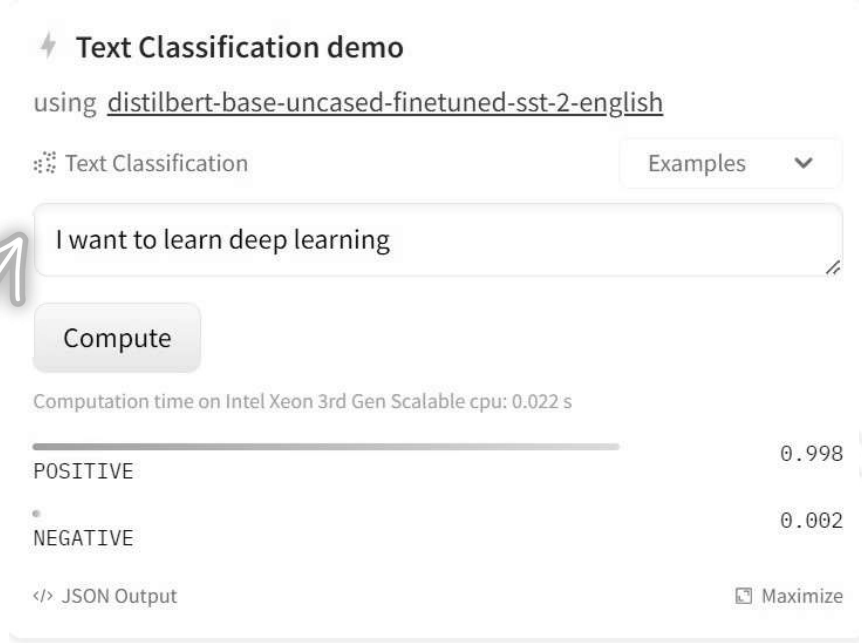


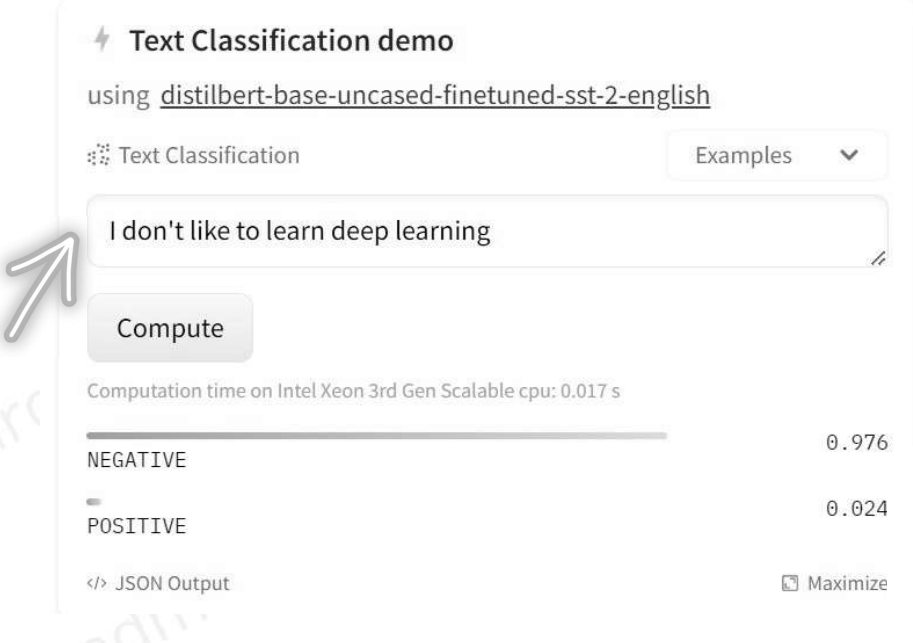
Hugging Face



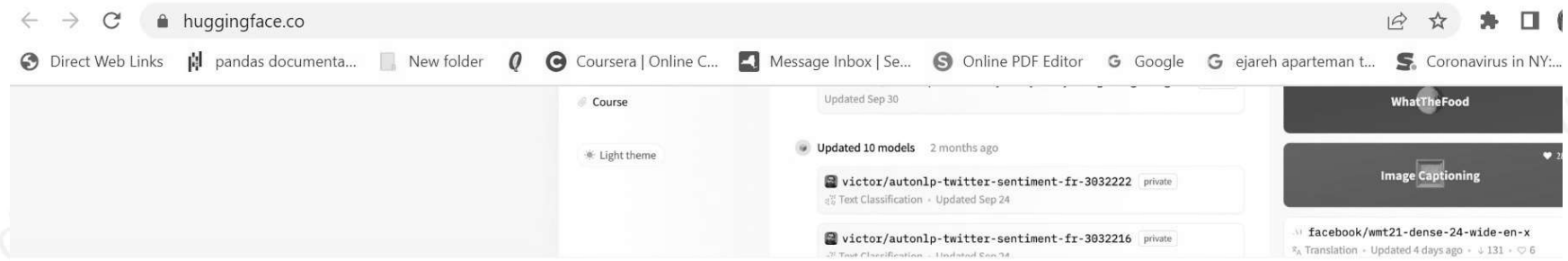


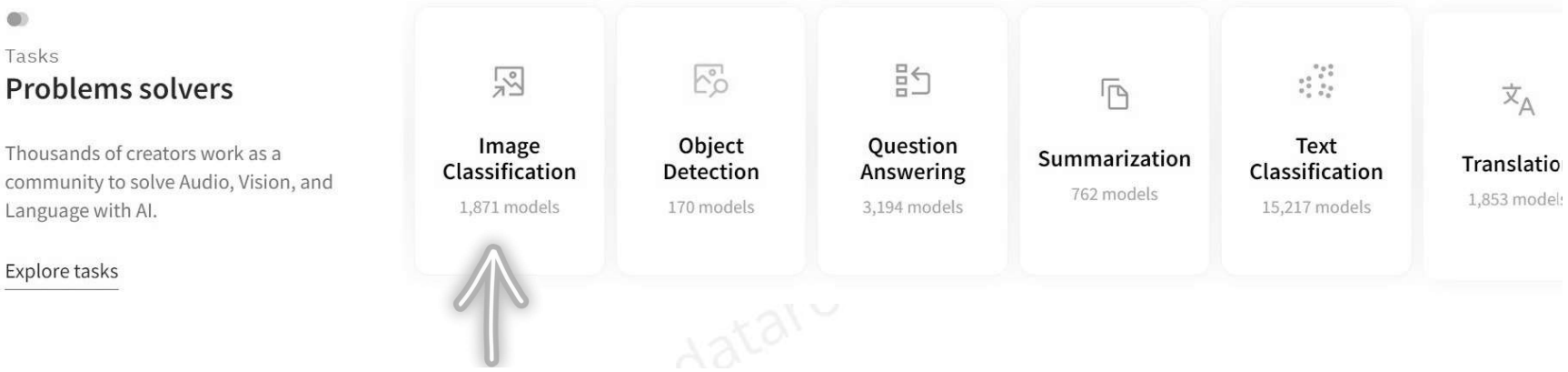
Hugging Face- Text Classification



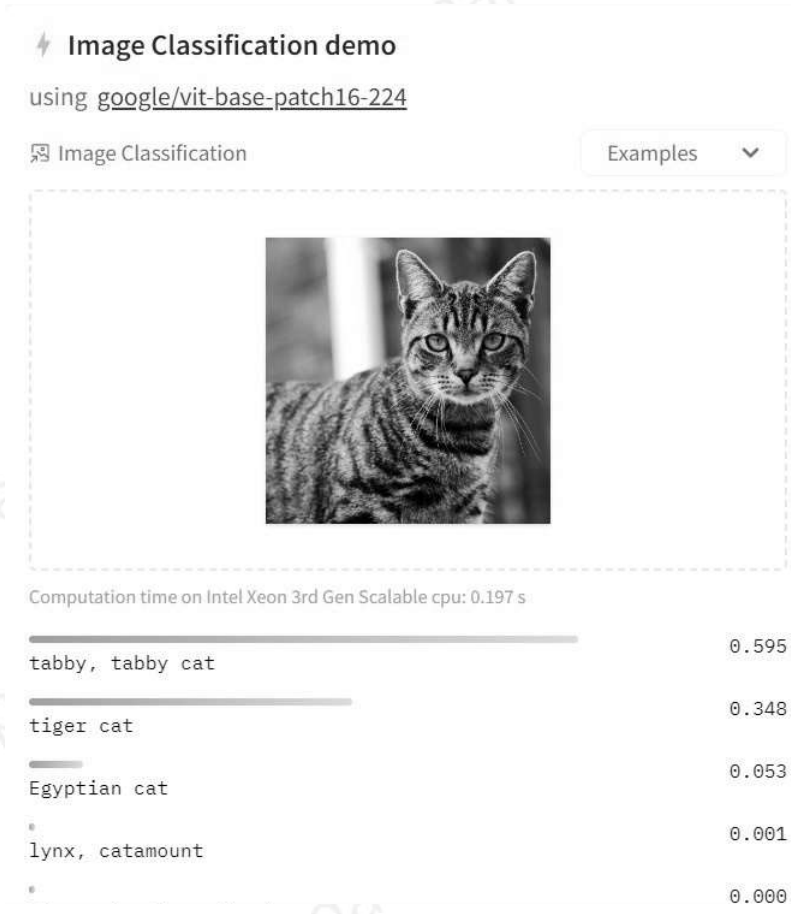


Hugging Face

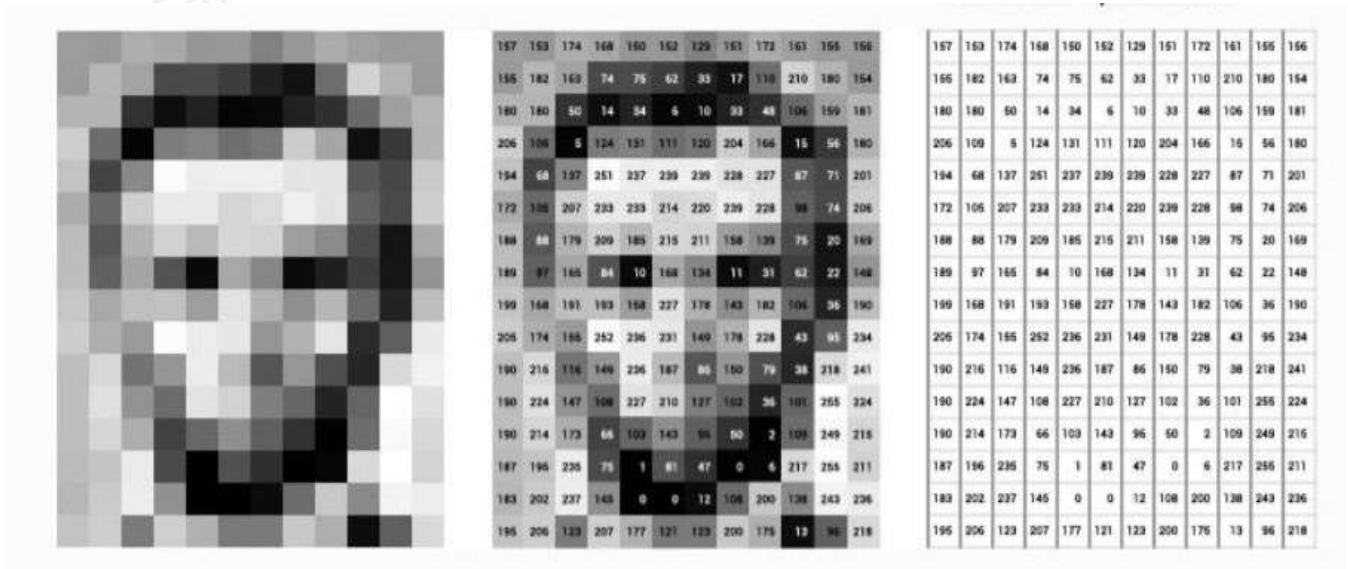




Hugging Face- Image Classification



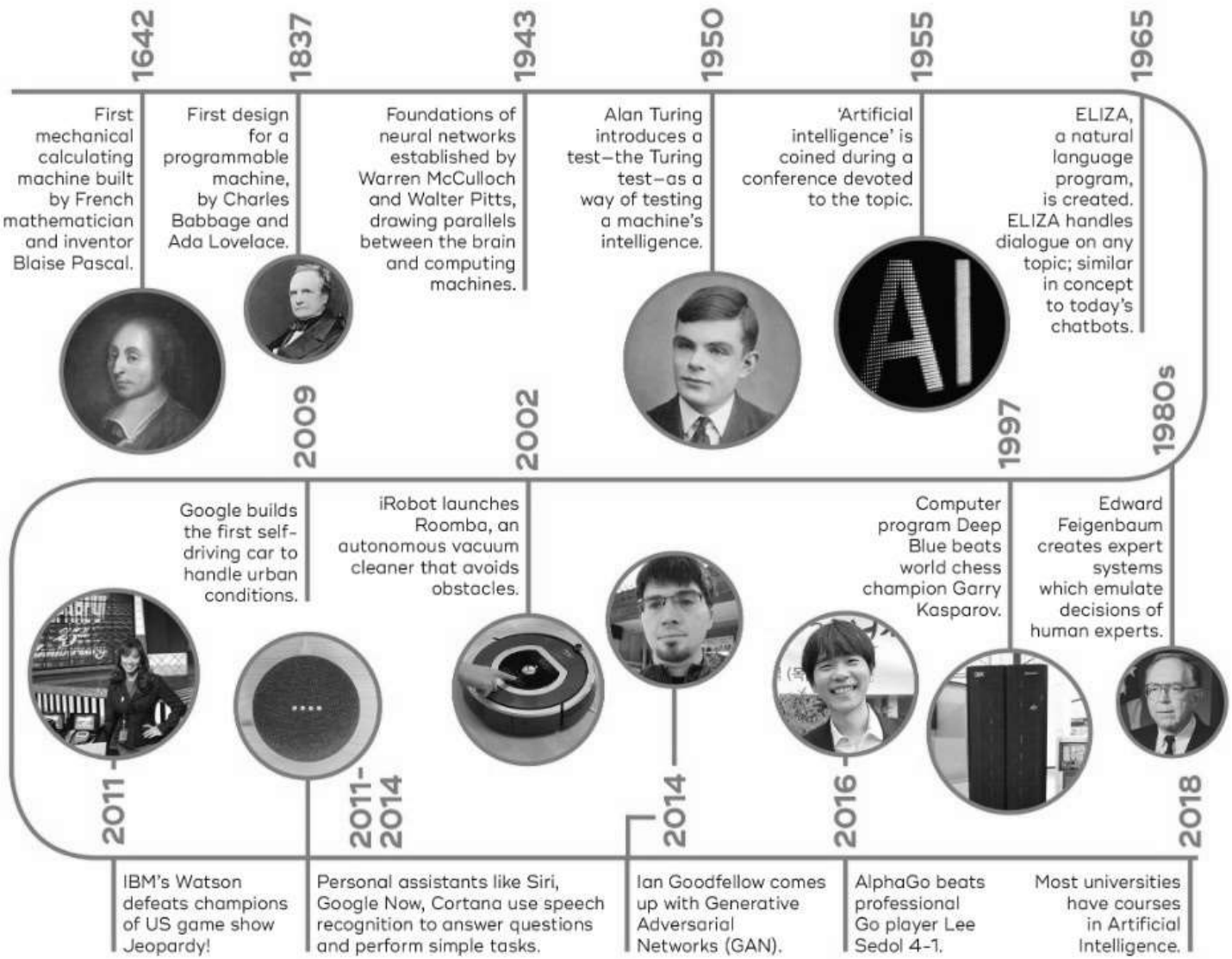
Hugging Face- Text Classification



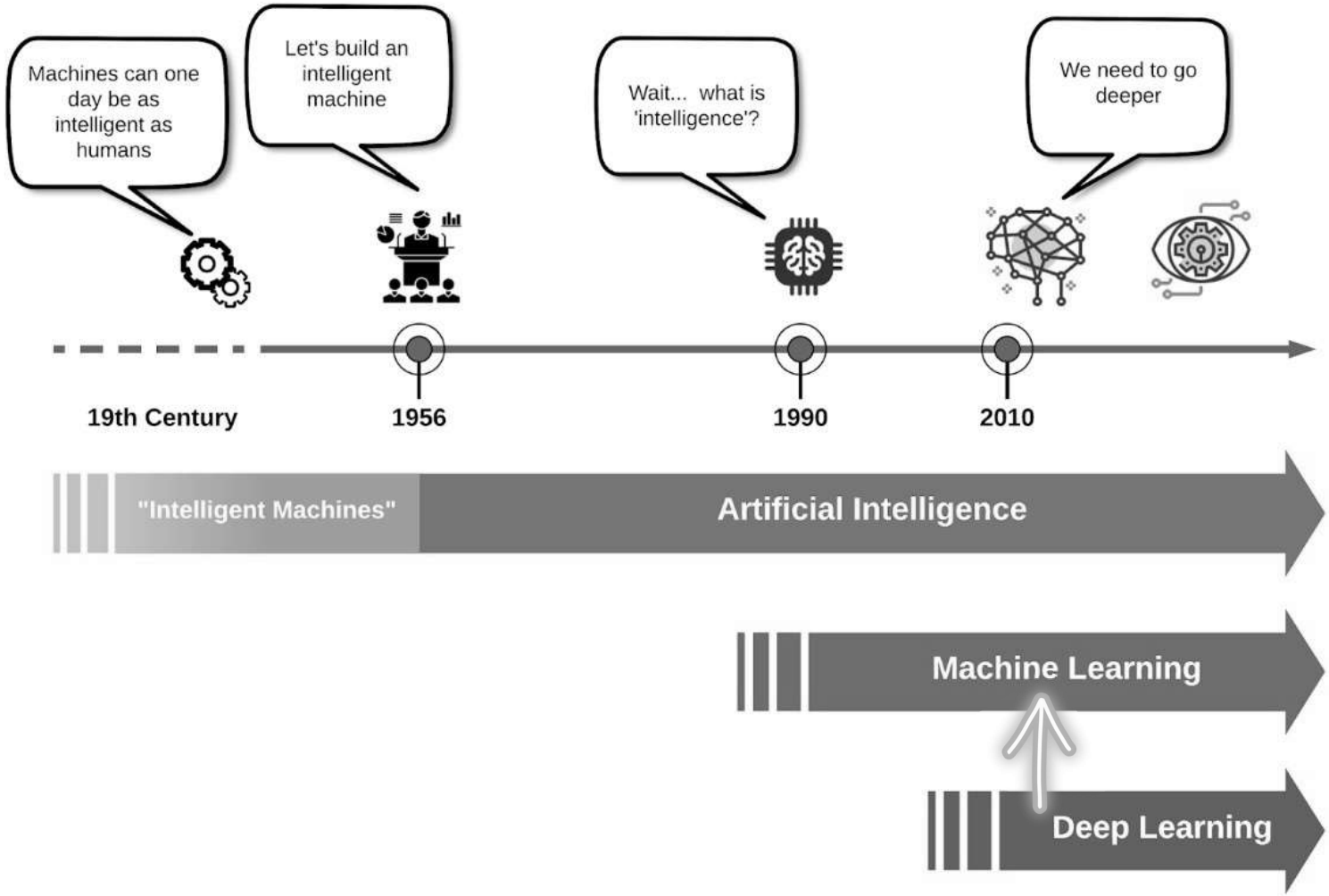
157	153	174	168	150	152	129	151	172	161	155	156
155	182	163	74	75	62	33	17	110	210	180	154
180	180	50	14	34	6	10	33	48	106	159	181
206	109	5	124	131	111	120	204	166	15	56	180
194	68	137	251	237	239	239	228	227	87	71	201
172	105	207	233	233	214	220	239	228	98	74	206
188	88	179	209	185	215	211	158	139	75	20	169
189	97	165	84	10	168	134	11	31	62	22	148
199	168	191	193	158	227	178	143	182	106	36	190
206	174	155	252	236	231	149	178	228	43	95	234
190	216	116	149	236	187	86	150	79	38	218	241
190	224	147	108	227	210	127	102	36	101	255	224
190	214	173	66	103	143	96	50	2	109	249	215
187	196	235	75	1	81	47	0	6	217	255	211
183	202	237	145	0	0	12	108	200	138	243	236
195	206	123	207	177	121	123	200	175	13	96	218

dataroadmap

AI History


1642
First mechanical calculating machine built by French mathematician and inventor Blaise Pascal.
1837
First design for a programmable machine, by Charles Babbage and Ada Lovelace.
1943
Foundations of neural networks established by Warren McCulloch and Walter Pitts, drawing parallels between the brain and computing machines.
1950
Alan Turing introduces a test—the Turing test—as a way of testing a machine's intelligence.
1955
'Artificial intelligence' is coined during a conference devoted to the topic.
1965
ELIZA, a natural language program, is created. ELIZA handles dialogue on any topic; similar in concept to today's chatbots.
1980s
Edward Feigenbaum creates expert systems which emulate decisions of human experts.
1997
Computer program Deep Blue beats world chess champion Garry Kasparov.
2002
iRobot launches Roomba, an autonomous vacuum cleaner that avoids obstacles.
2009
Google builds the first self-driving car to handle urban conditions.
2011
IBM's Watson defeats champions of US game show Jeopardy!
2011-2014
Personal assistants like Siri, Google Now, Cortana use speech recognition to answer questions and perform simple tasks.
2014
Ian Goodfellow comes up with Generative Adversarial Networks (GAN).
2016
AlphaGo beats professional Go player Lee Sedol 4-1.
2018
Most universities have courses in Artificial Intelligence.

AI History


Machines can one day be as intelligent as humans
Let's build an intelligent machine
Wait... what is 'intelligence'?
We need to go deeper
19th Century
1956
1990
2010
"Intelligent Machines"
Artificial Intelligence
Machine Learning
Deep Learning