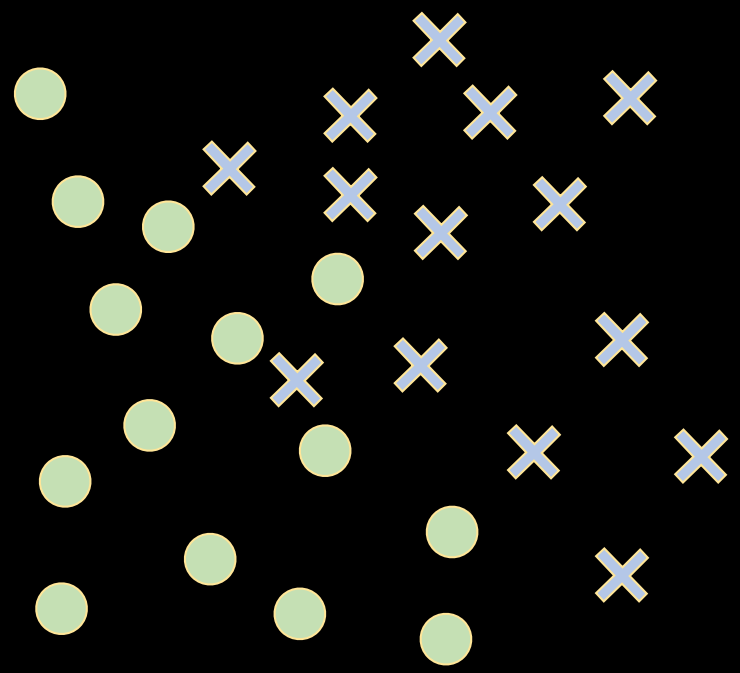
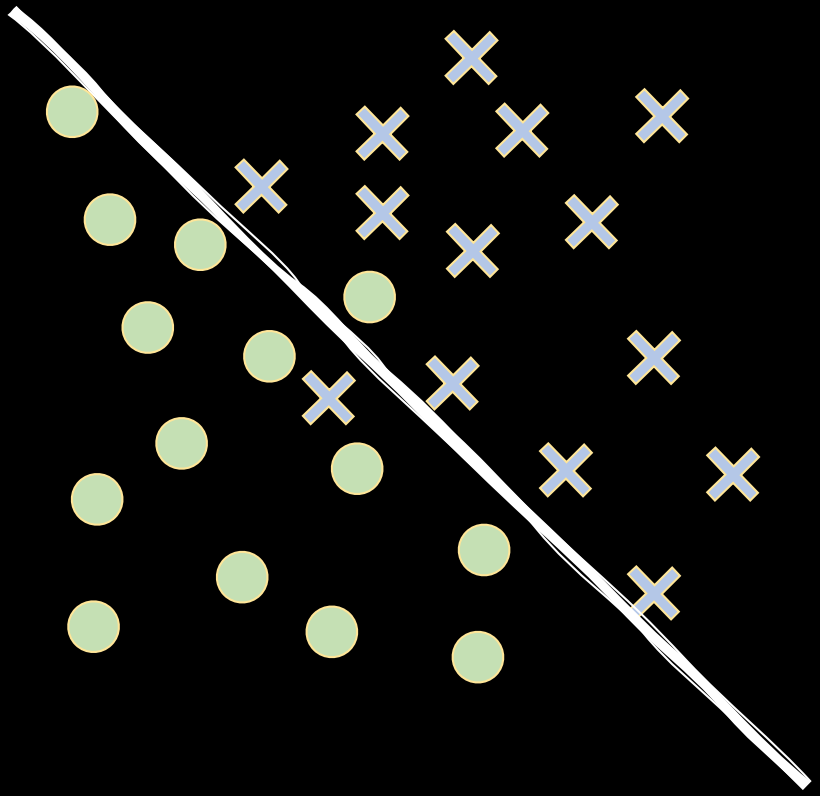
Umetna inteligenca

Blaž Zupan

podatki, strojno učenje, temeljni modeli, slike, besedila

REPUBLIKA SLOVENIJA
MINISTRSTVO ZA VZGOJO IN IZOBRAŽEVANJE
NAČRT ZA OKREVANJE IN ODPORNOST
Financira Evropska unija
NextGenerationEU

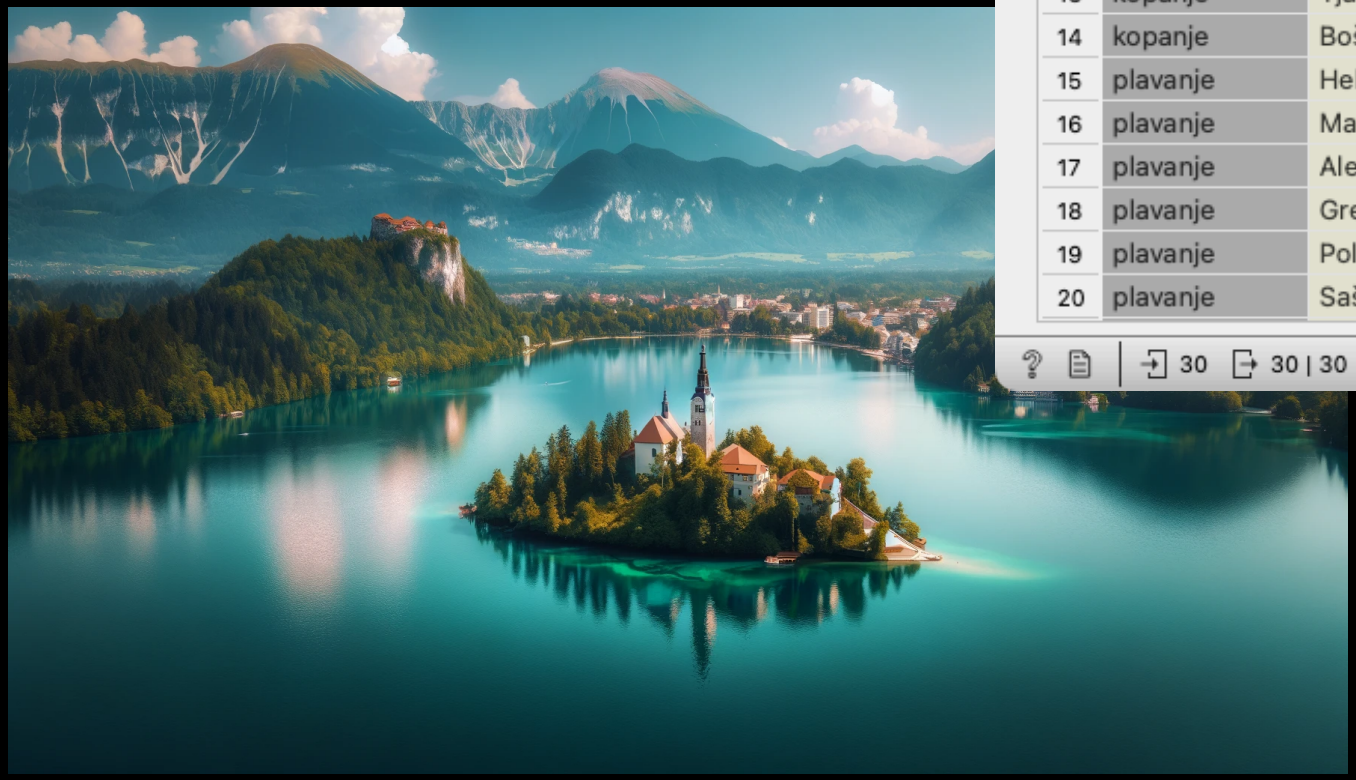


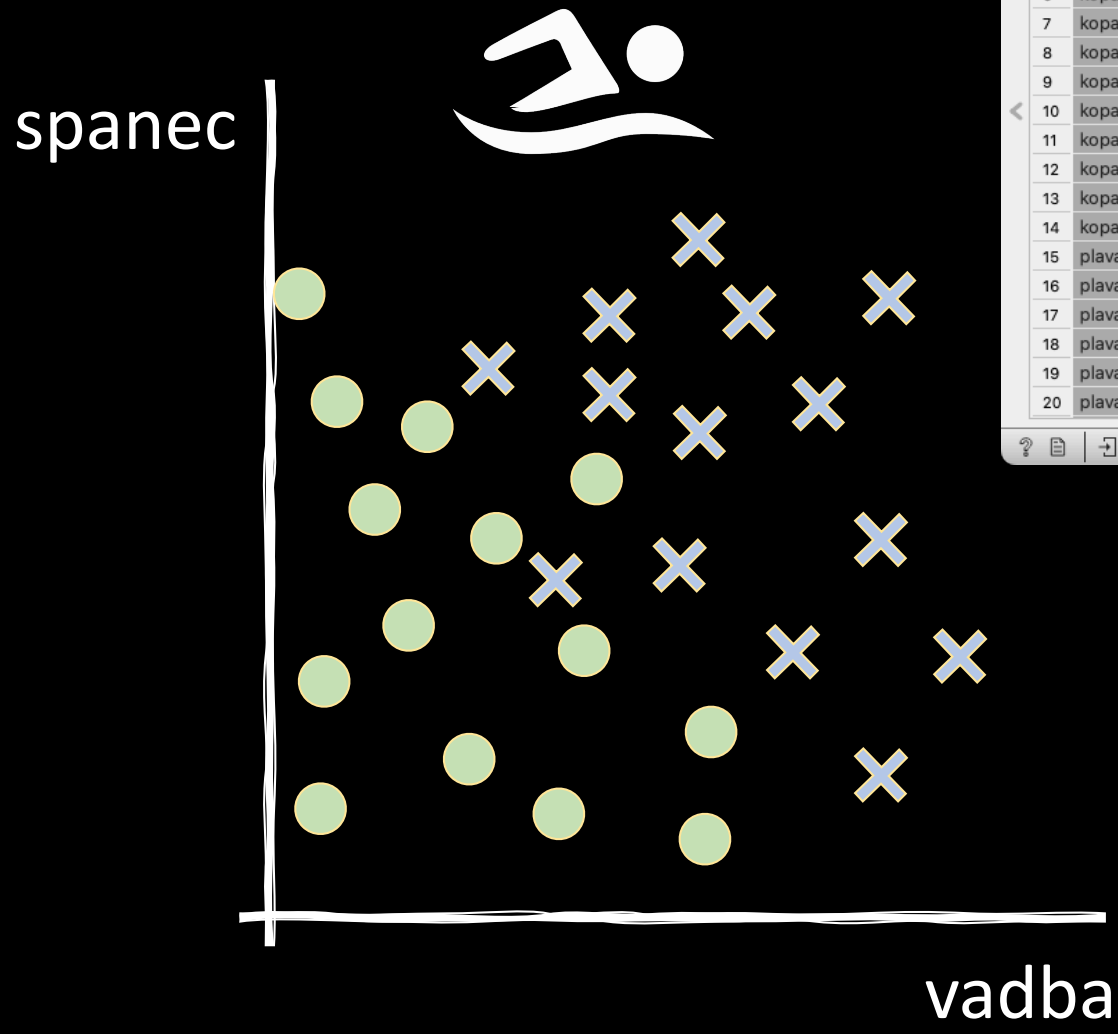


Data Table

	aktivnost	ime	vadba	spanec
1	kopanje	Ana	2	8
2	kopanje	Marko	4	7
3	kopanje	Petra	3	6
4	kopanje	Janez	5	6
5	kopanje	Maja	9	6
6	kopanje	Andrej	5	5
7	kopanje	Nika	2	5
8	kopanje	Luka	5	4
9	kopanje	Katarina	4	3
10	kopanje	Miha	6	4
11	kopanje	Irena	9	3
12	kopanje	Jure	8	4
13	kopanje	Tjaša	11	3
14	kopanje	Boštjan	7	5
15	plavanje	Helena	4	9
16	plavanje	Matej	4	8
17	plavanje	Alenka	7	8
18	plavanje	Gregor	10	9
19	plavanje	Polona	9	8
20	plavanje	Sašo	10	7

30 30 | 30

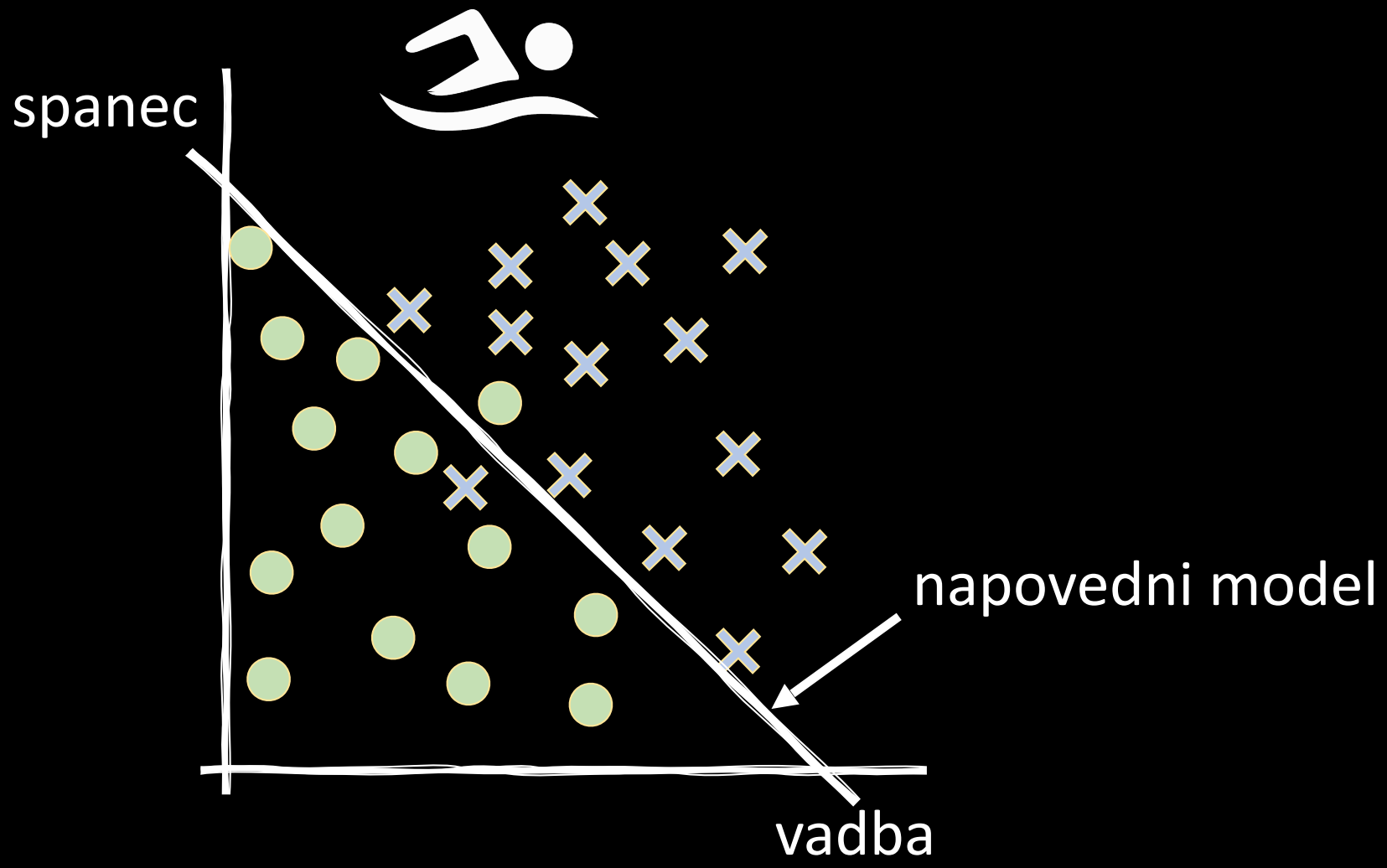


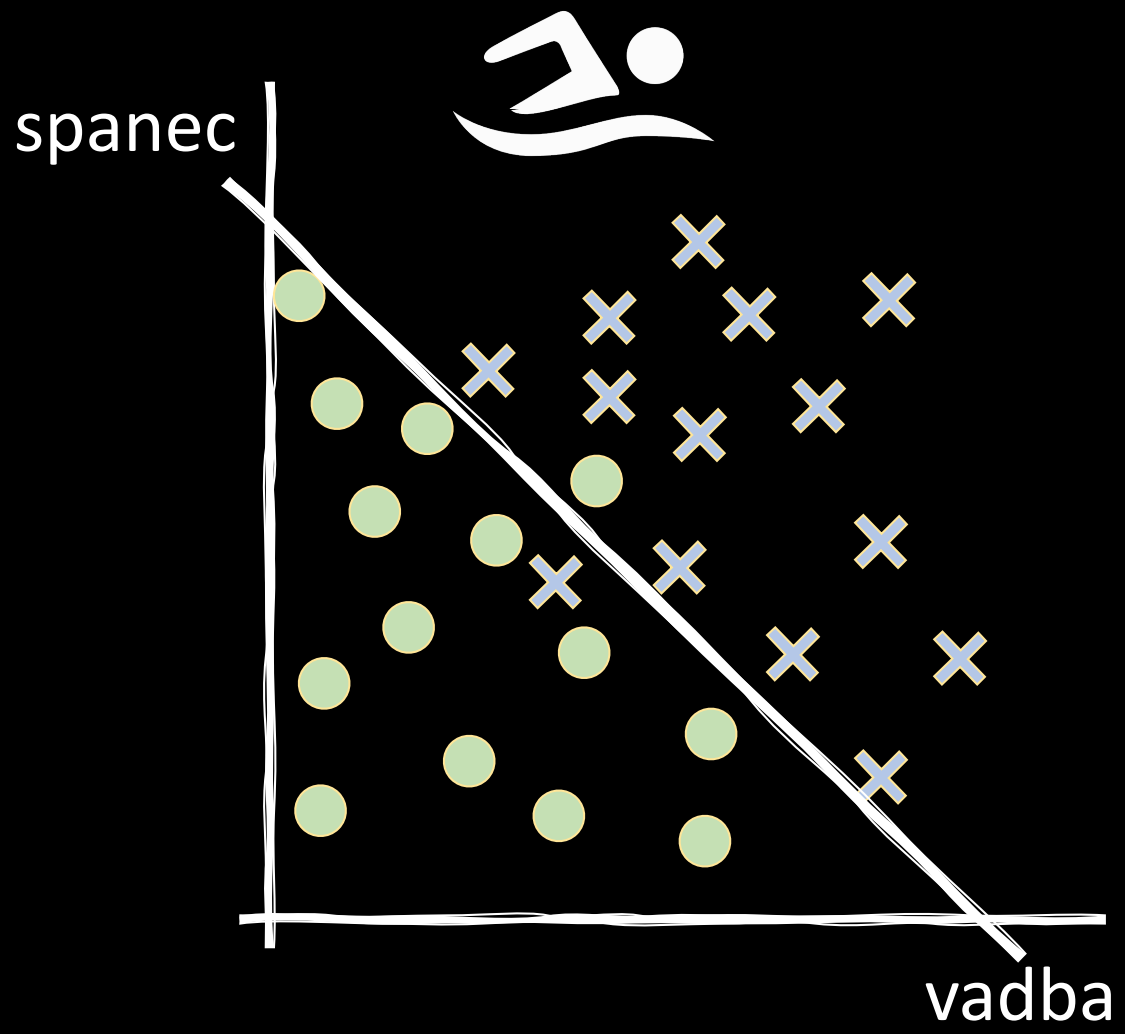


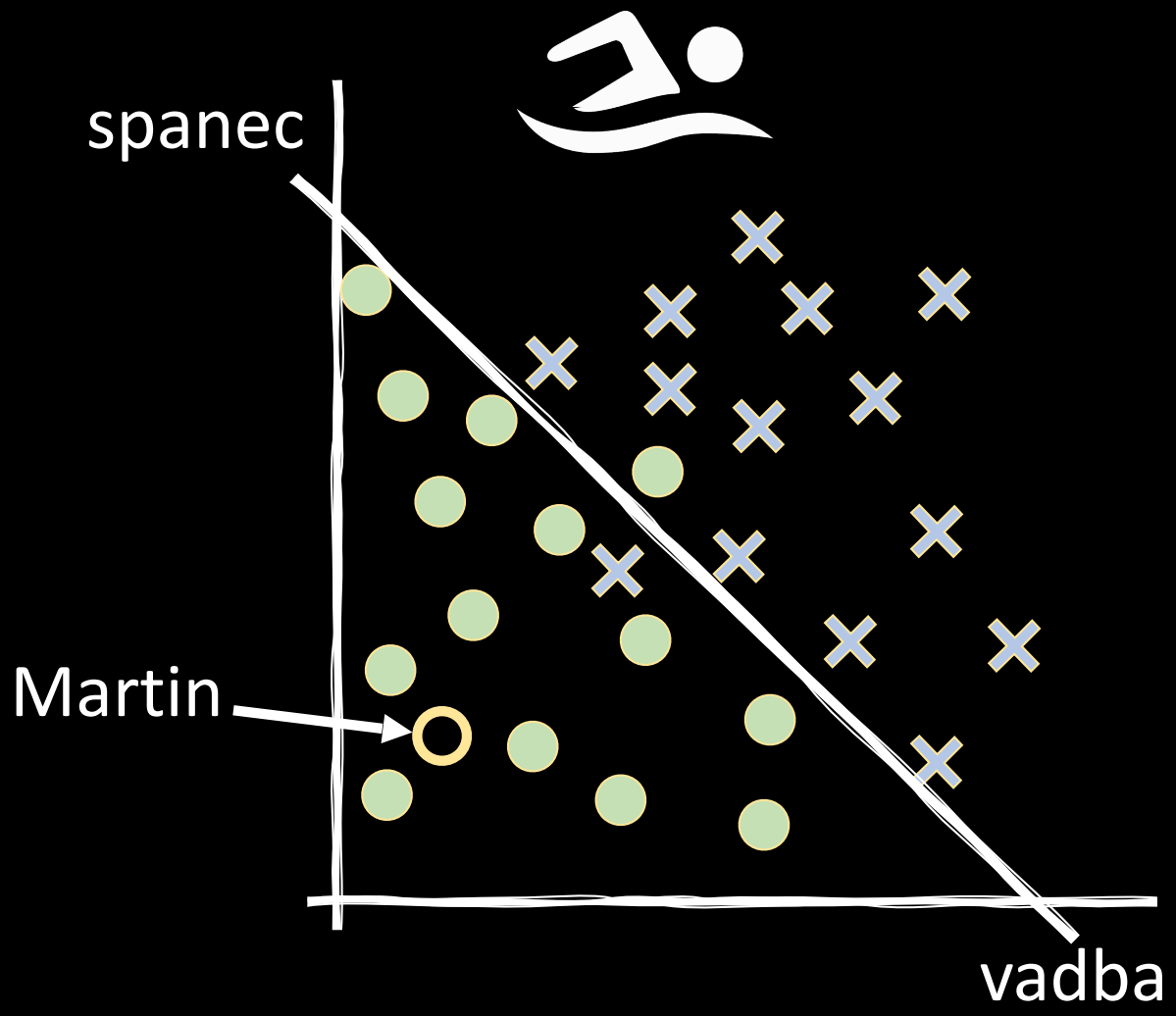
Data Table

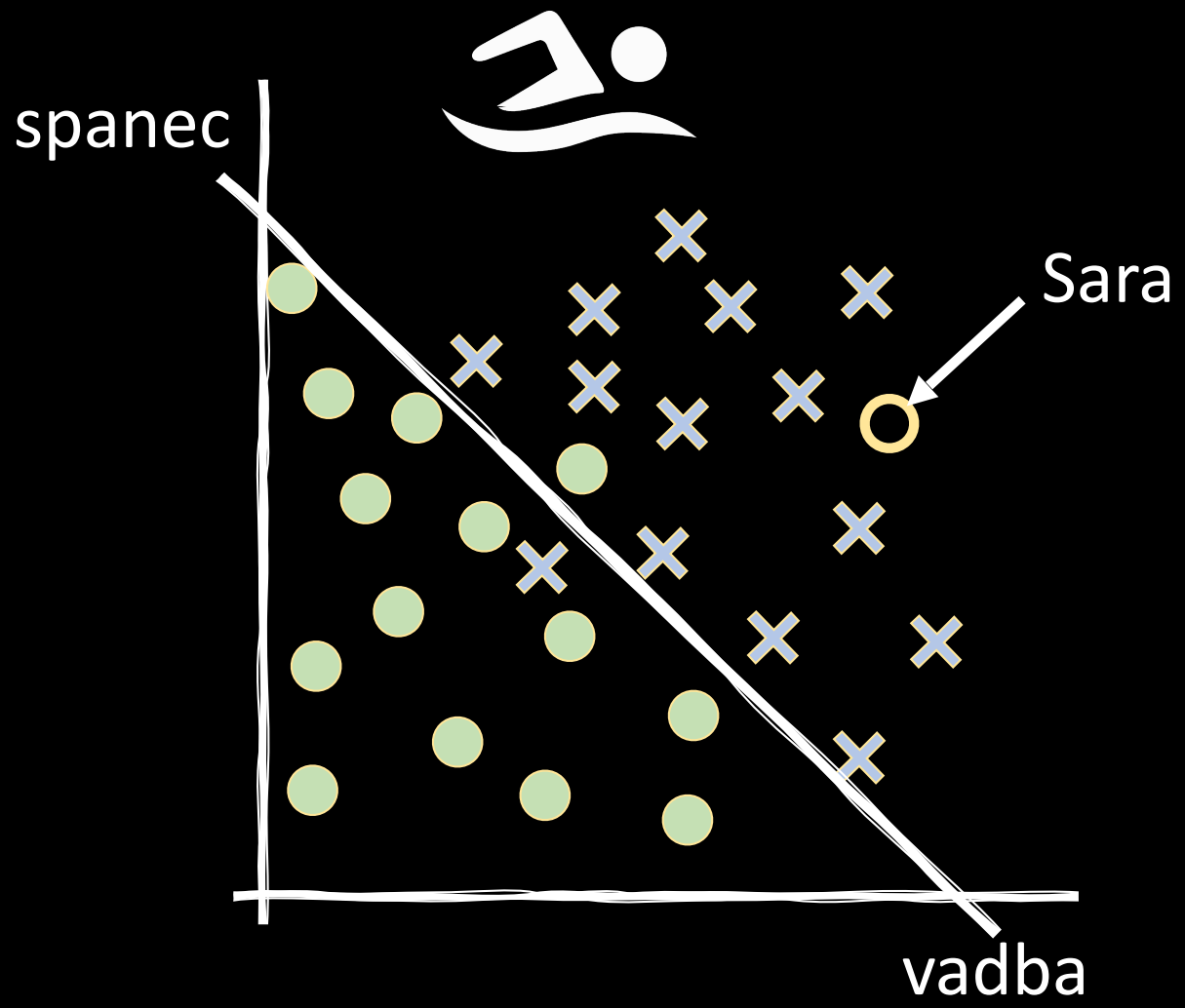
	aktivnost	ime	vadba	spanec
1	kopanje	Ana	2	8
2	kopanje	Marko	4	7
3	kopanje	Petra	3	6
4	kopanje	Janez	5	6
5	kopanje	Maja	9	6
6	kopanje	Andrej	5	5
7	kopanje	Nika	2	5
8	kopanje	Luka	5	4
9	kopanje	Katarina	4	3
10	kopanje	Miha	6	4
11	kopanje	Irena	9	3
12	kopanje	Jure	8	4
13	kopanje	Tjaša	11	3
14	kopanje	Boštjan	7	5
15	plavanje	Helena	4	9
16	plavanje	Matej	4	8
17	plavanje	Alenka	7	8
18	plavanje	Gregor	10	9
19	plavanje	Polona	9	8
20	plavanje	Sašo	10	7

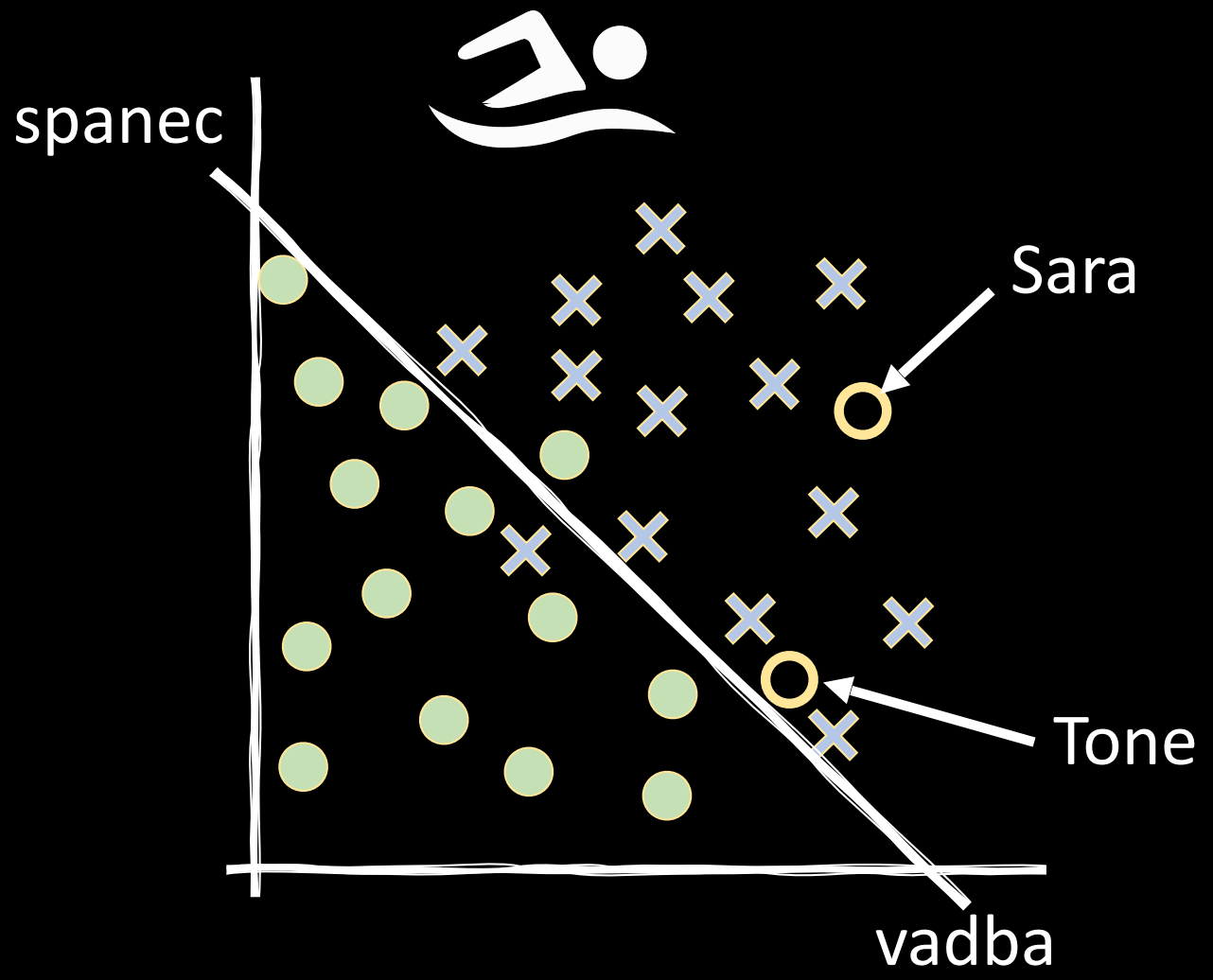
30 | 30 | 30

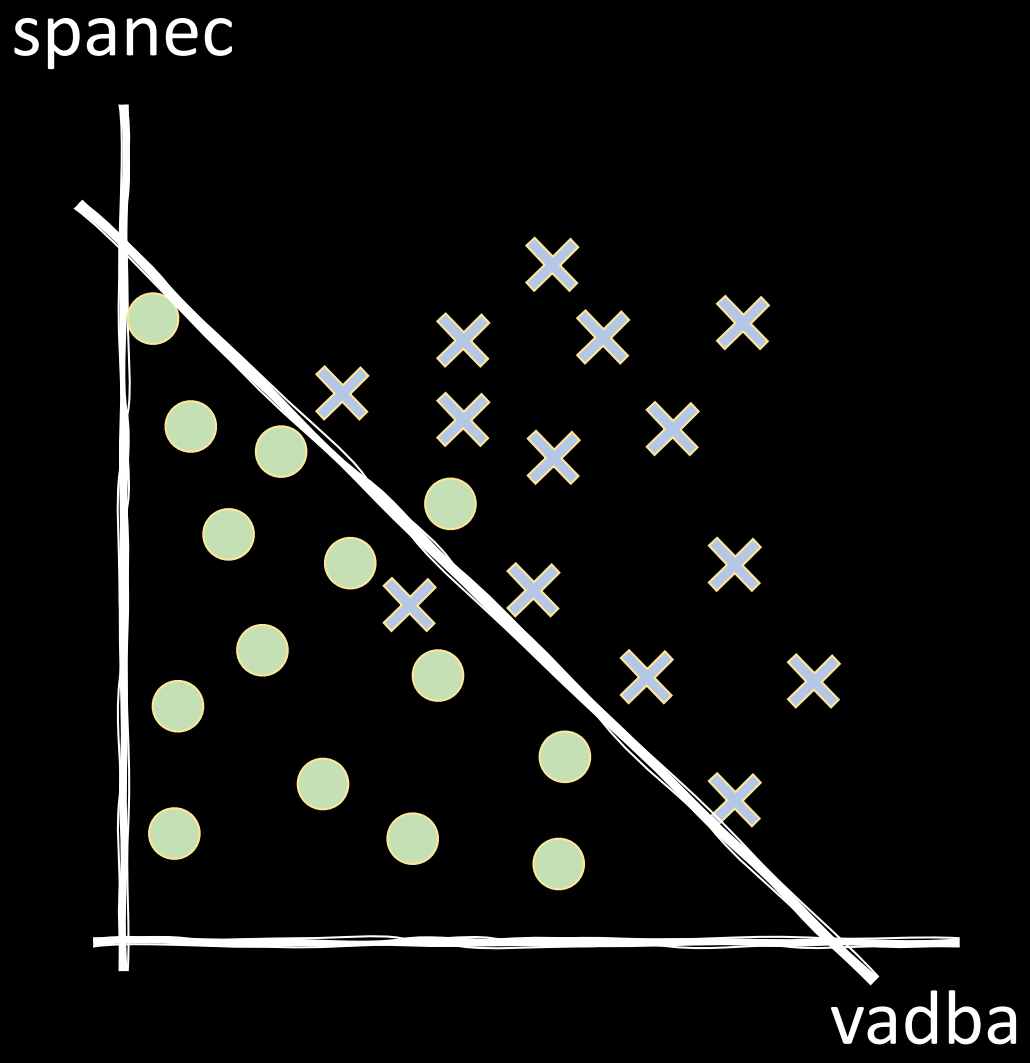

spanec
napovedni model
vadba


spanec
vadba


spanec
Martin
vadba

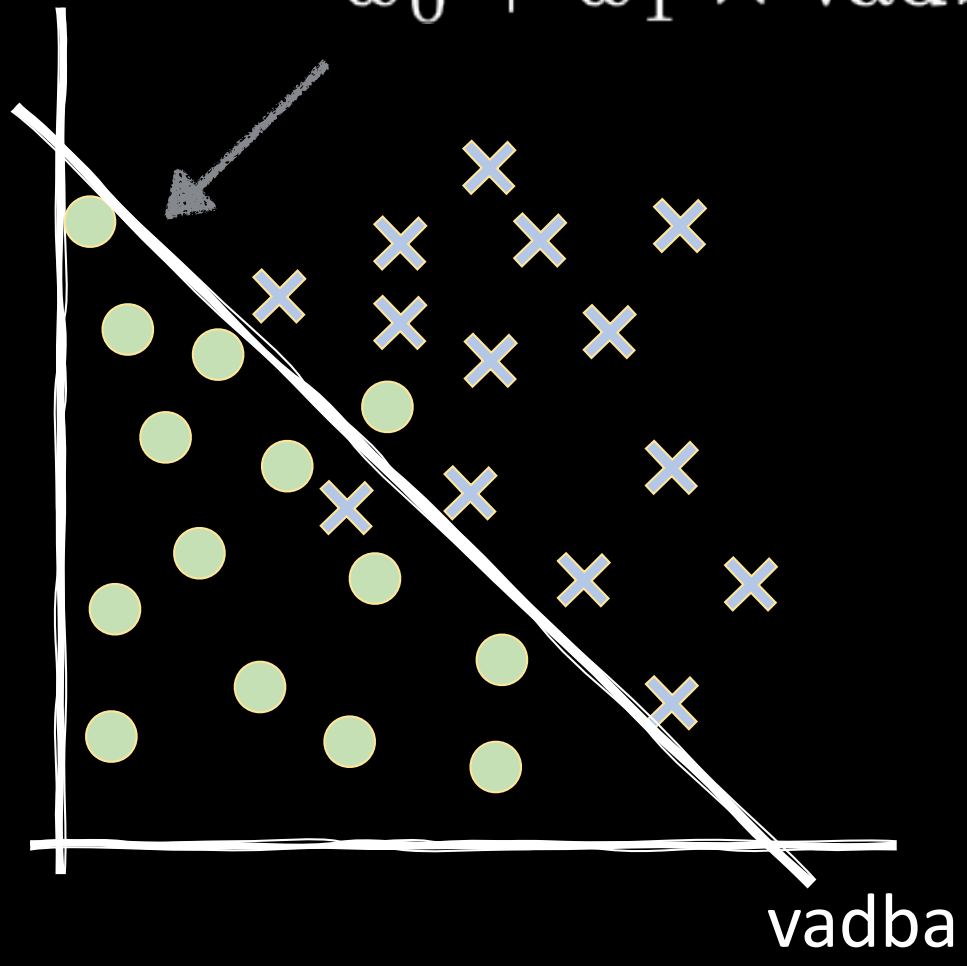

spanec
Sara
vadba


spanec
Sara
Tone
vadba


spanec
vadba

spanec

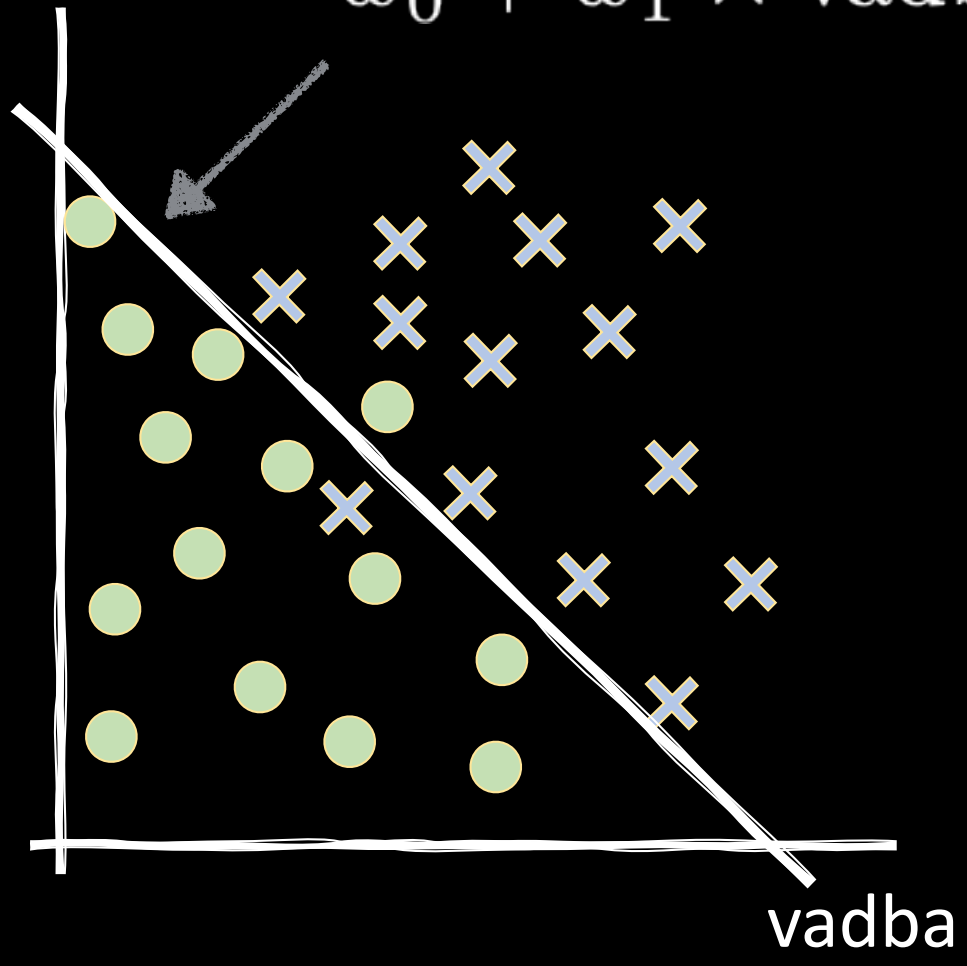
$$w_0 + w_1 \times \text{vadba} + w_2 \times \text{spanec} = 0$$



vadba

spanec

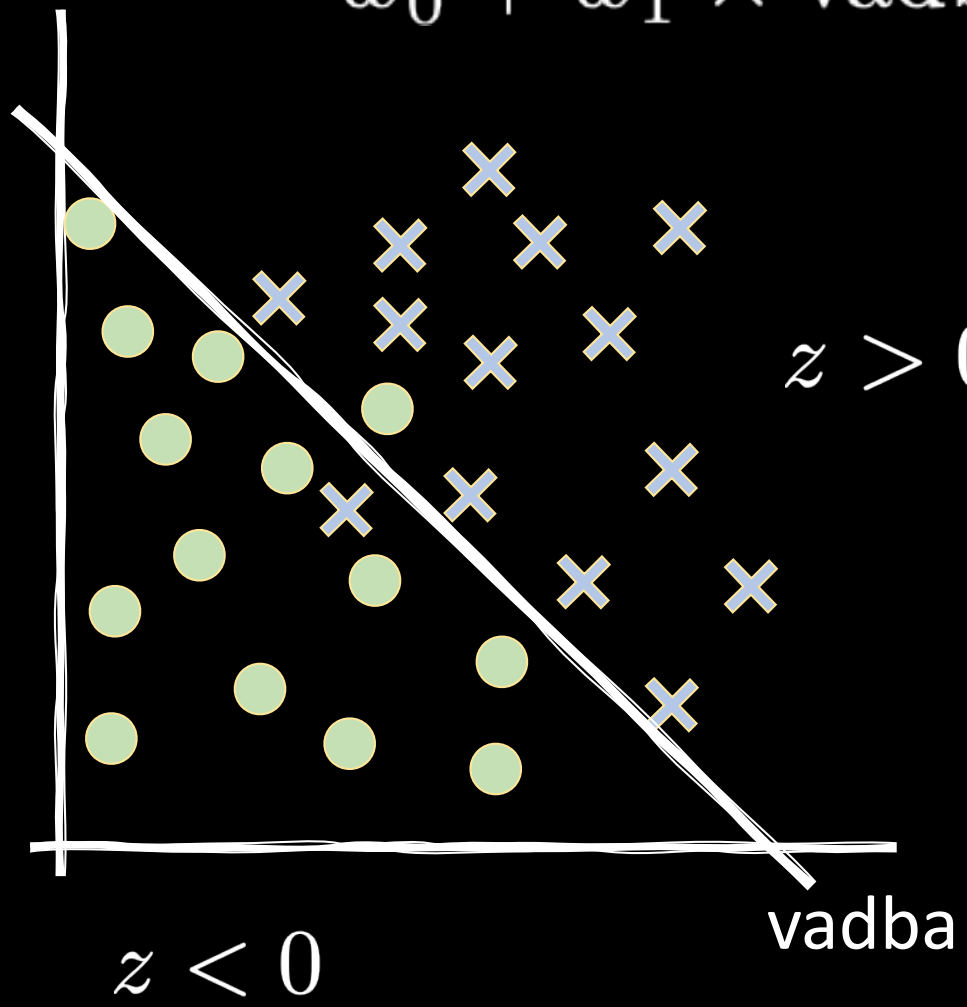
$$w_0 + w_1 \times \text{vadba} + w_2 \times \text{spanec} = z$$



vadba

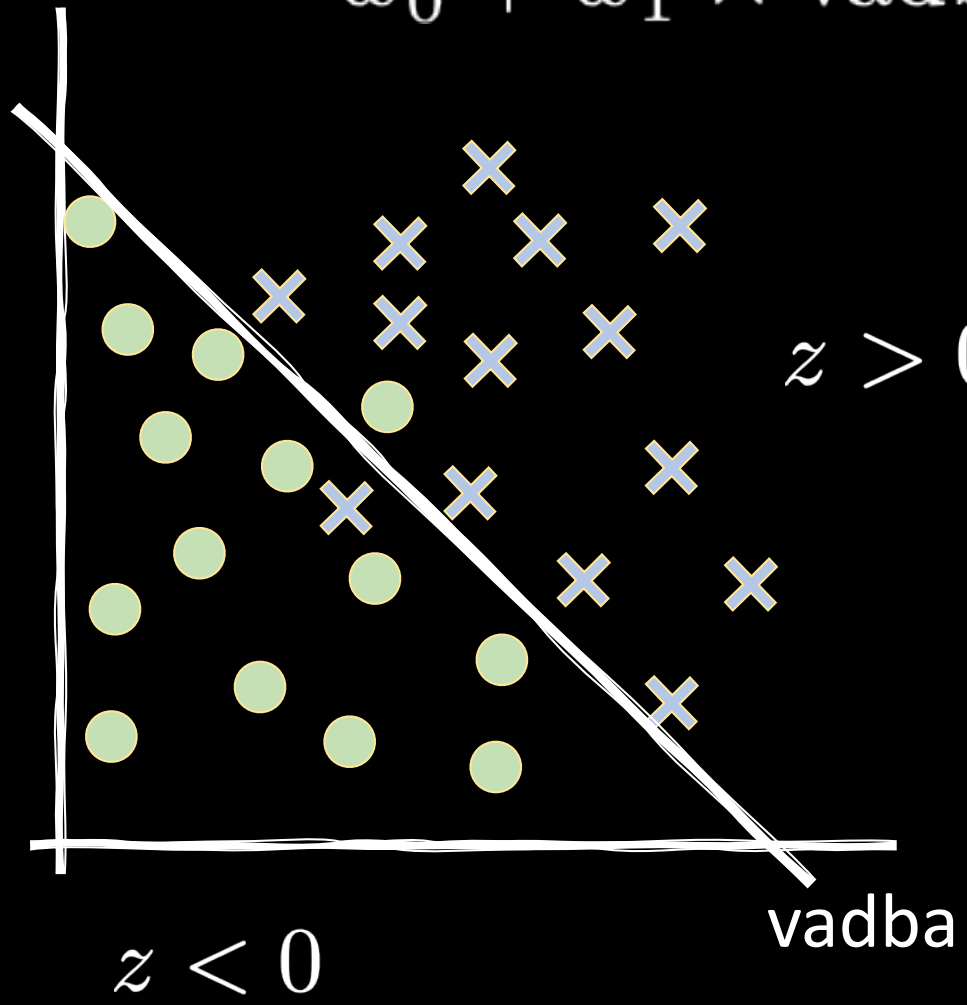
razdalja od odločitvene meje

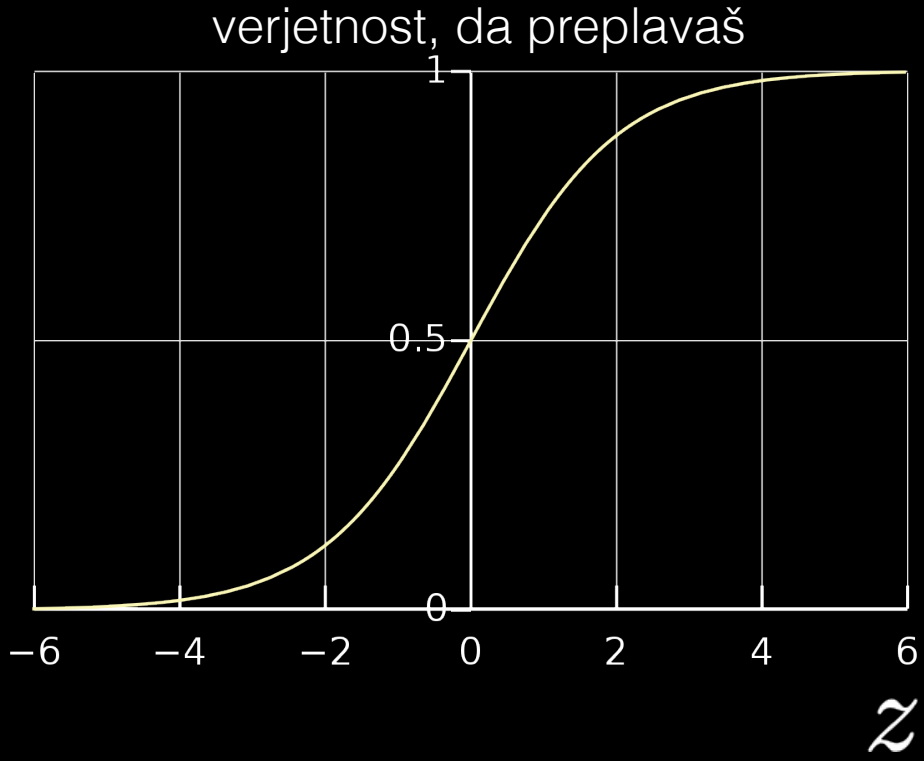
$$w_0 + w_1 \times \text{vadba} + w_2 \times \text{spanec} = z$$

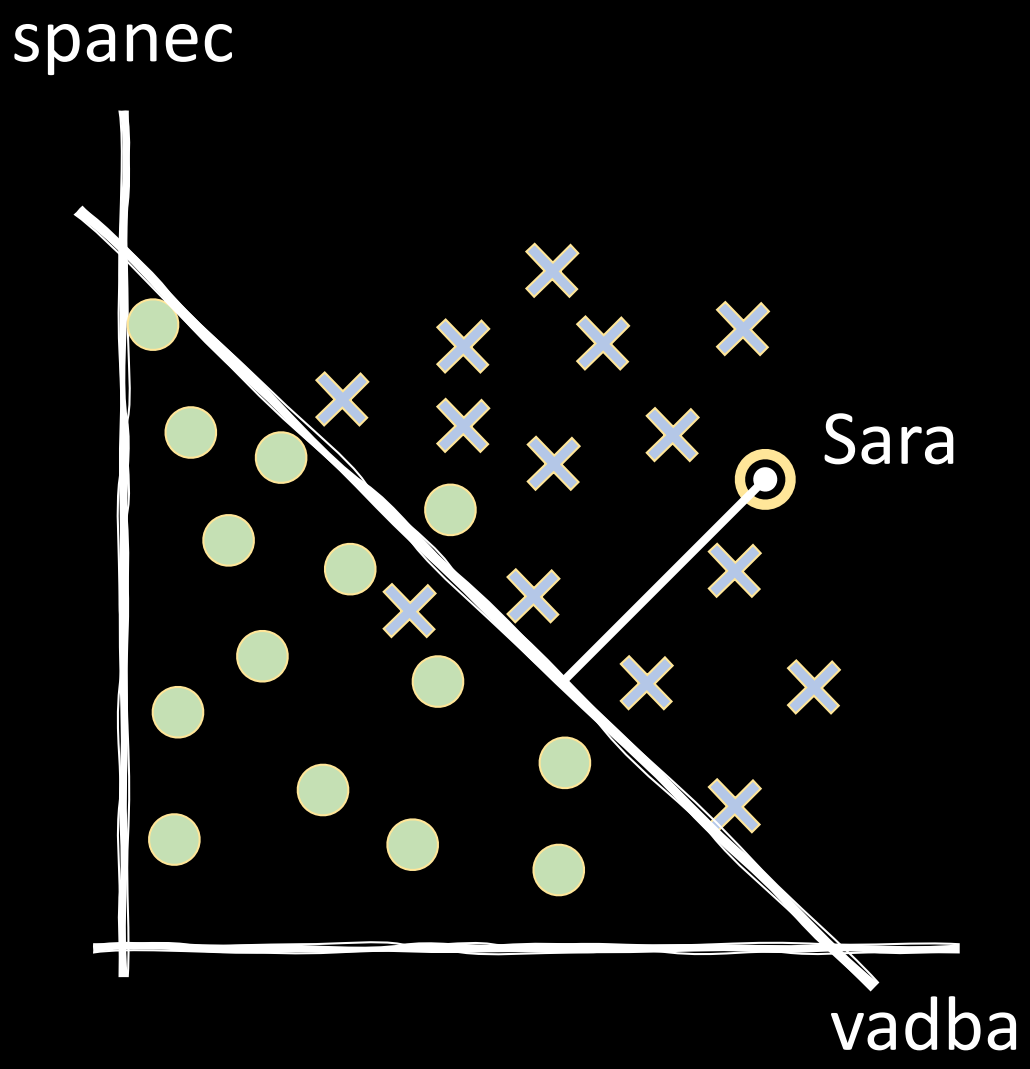


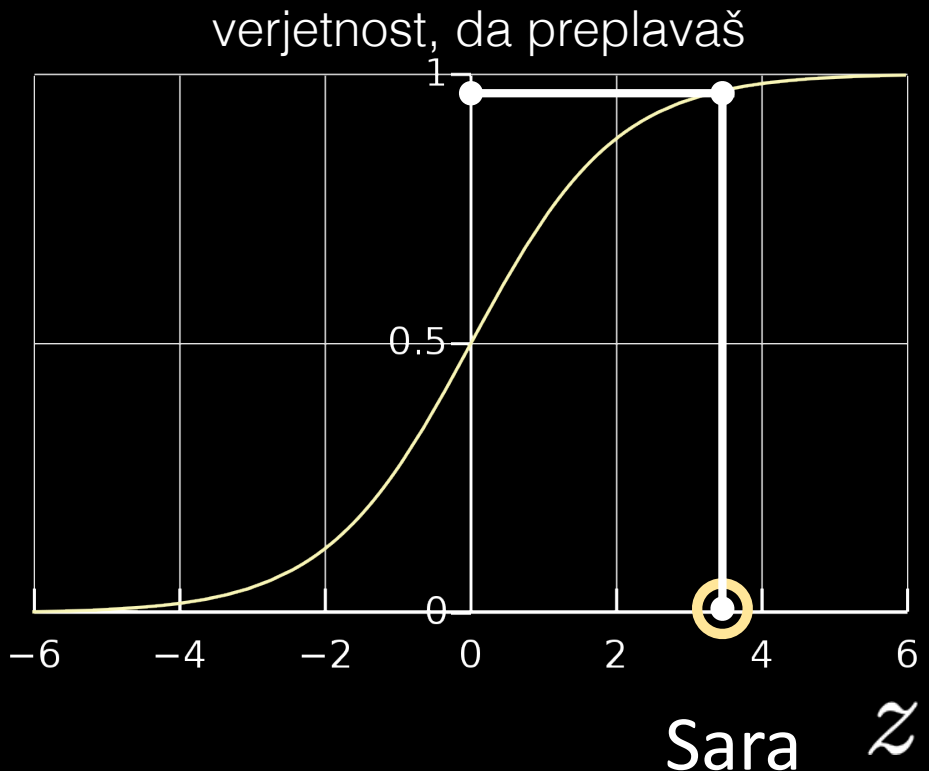
spanec

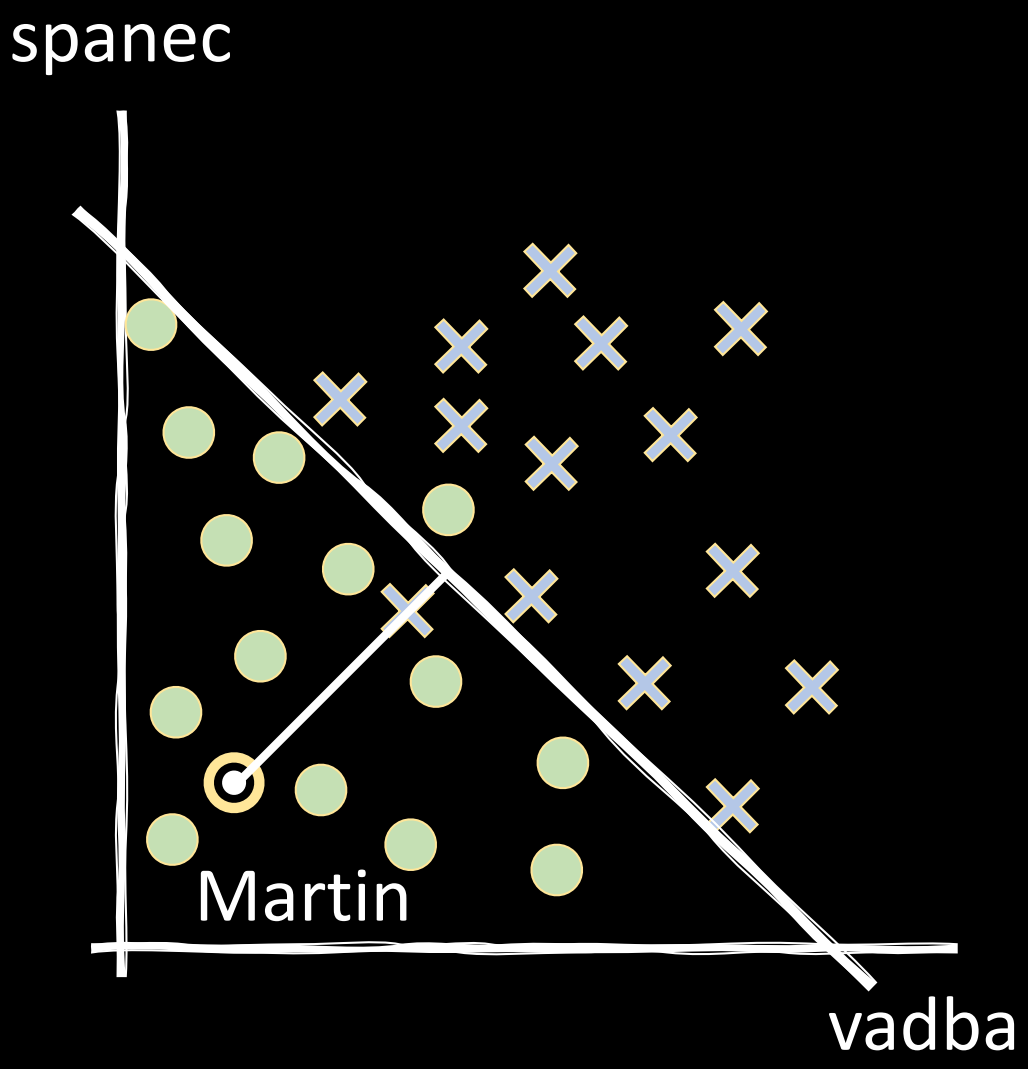
$$w_0 + w_1 \times \text{vadba} + w_2 \times \text{spanec} = z$$



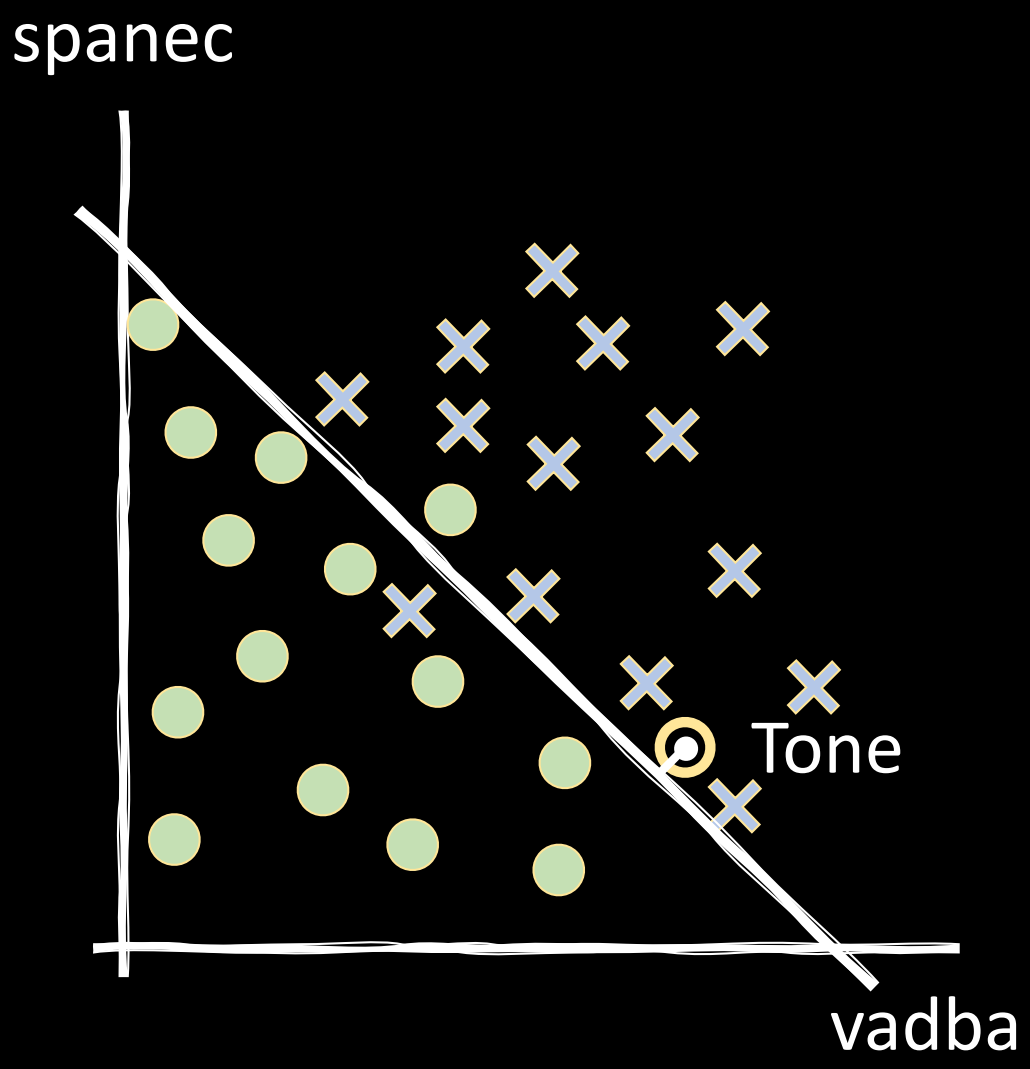



spanec
Sara
vadba


verjetnost, da preplavaš
1
0.5
0
−6
−4
−2
0
2
4
6
Sara
z

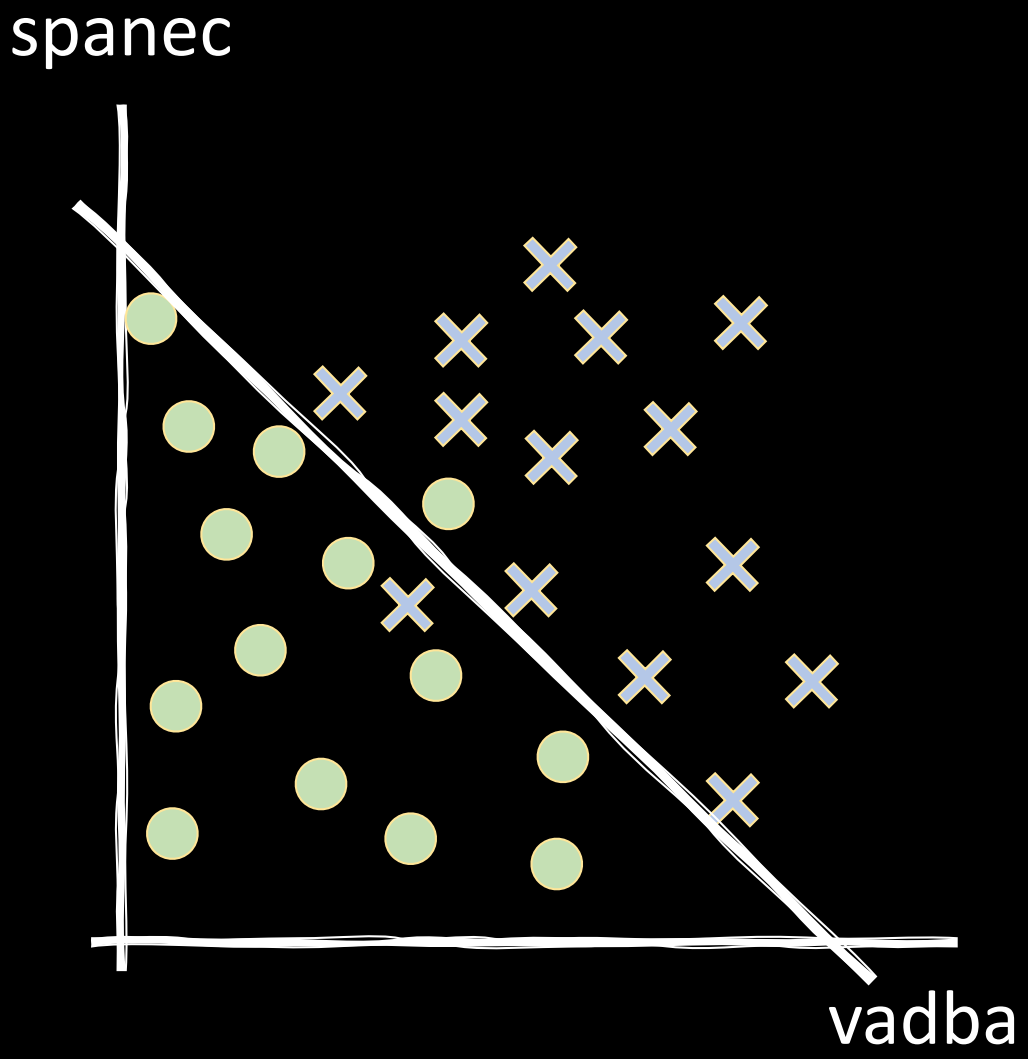

spanec
Martin
vadba

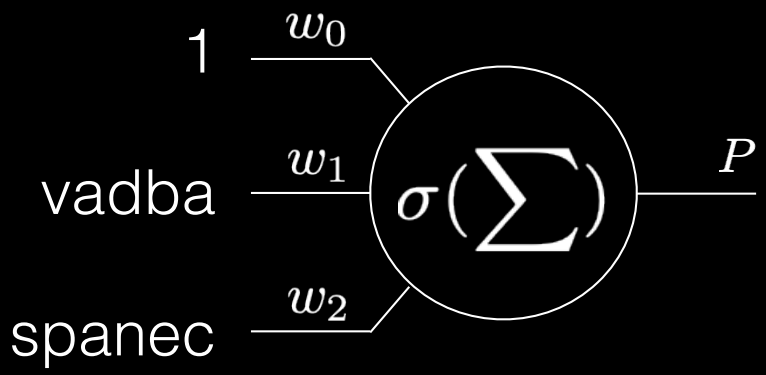

verjetnost, da preplavaš
1
0.5
0
−6
−4
−2
0
2
4
6
Martin
Tone
Sara
z

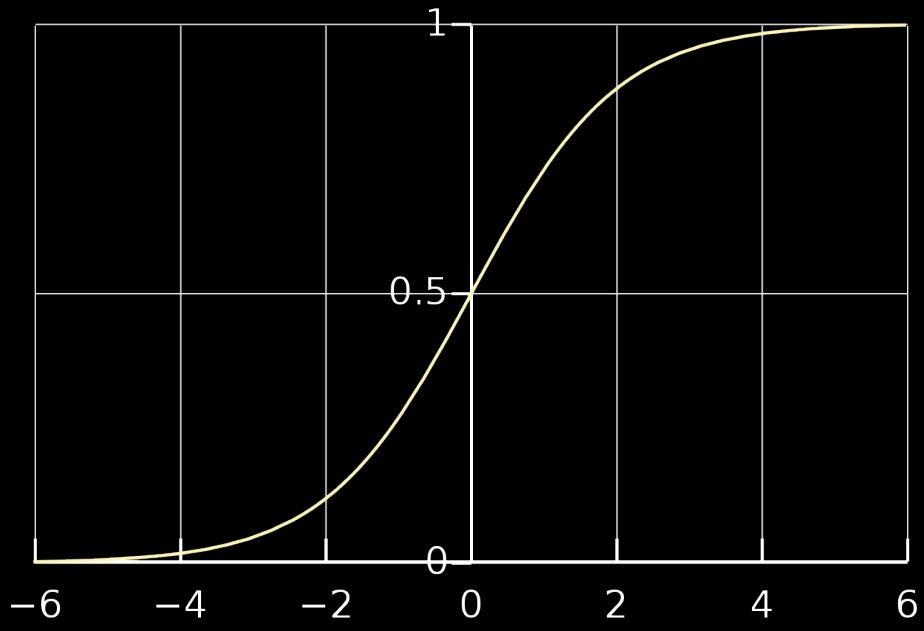

spanec
Tone
vadba


verjetnost, da preplavaš
1
0.5
0
−6
−4
−2
0
2
4
6
Tone
z

$$w_0 + w_1 \times \text{vadba} + w_2 \times \text{spanec} = z$$



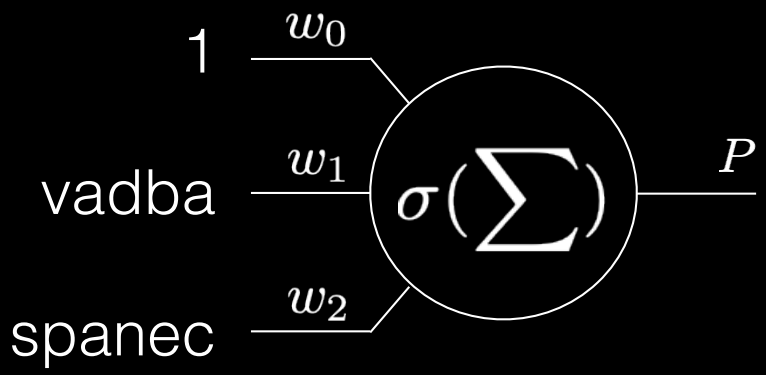


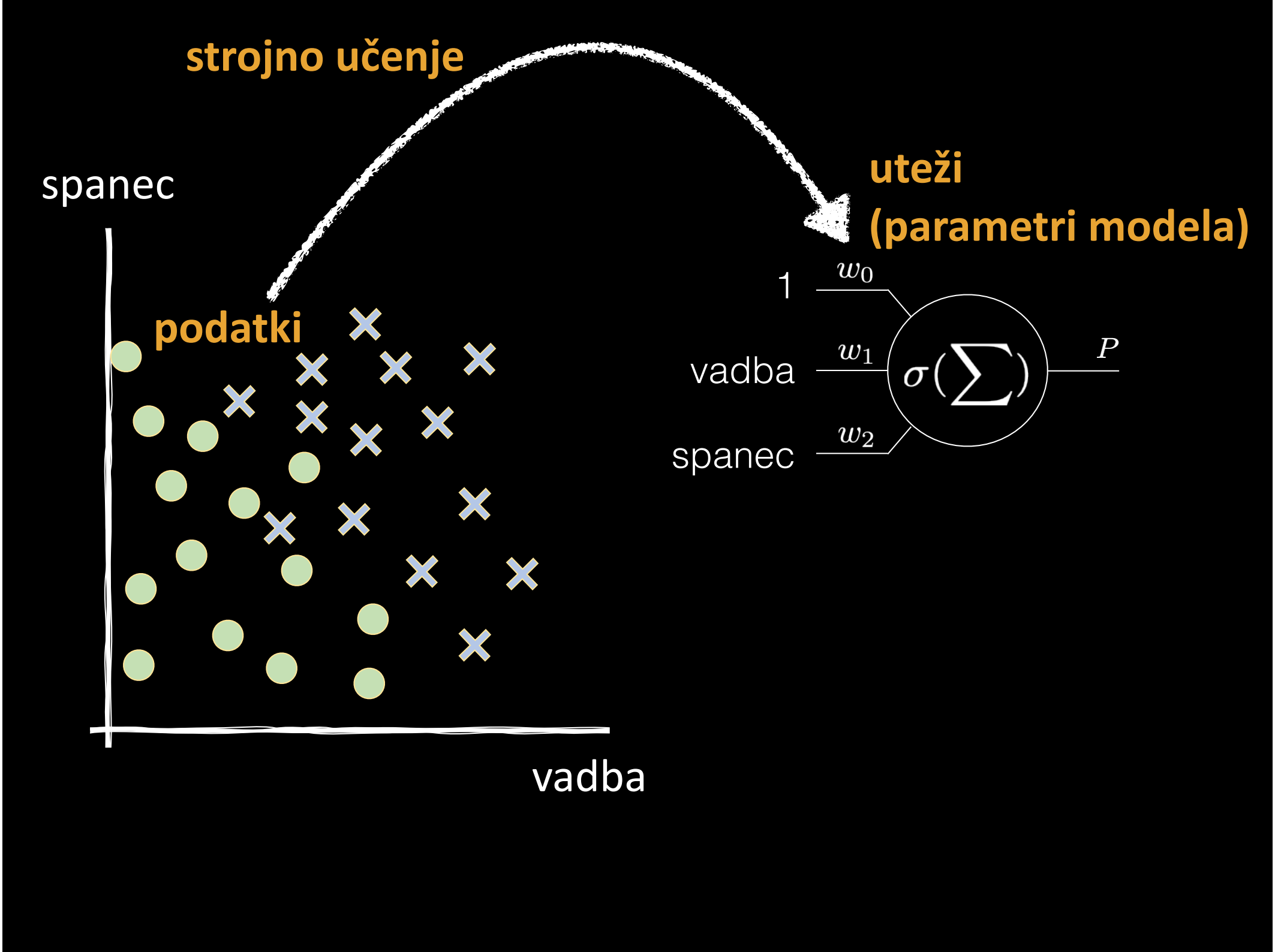


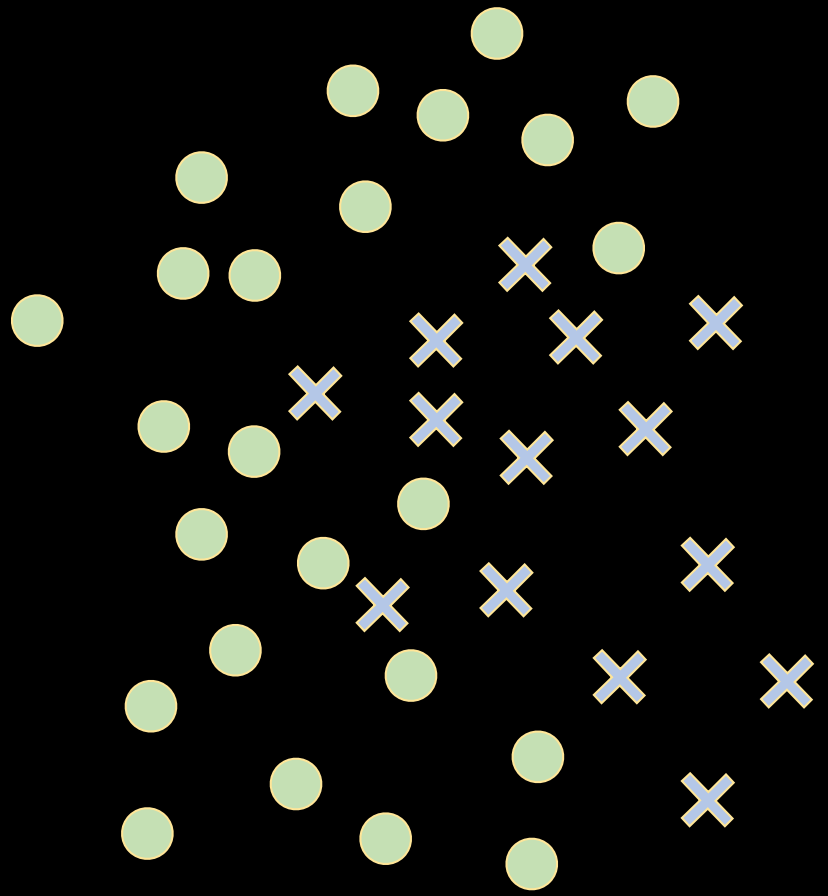
spanec

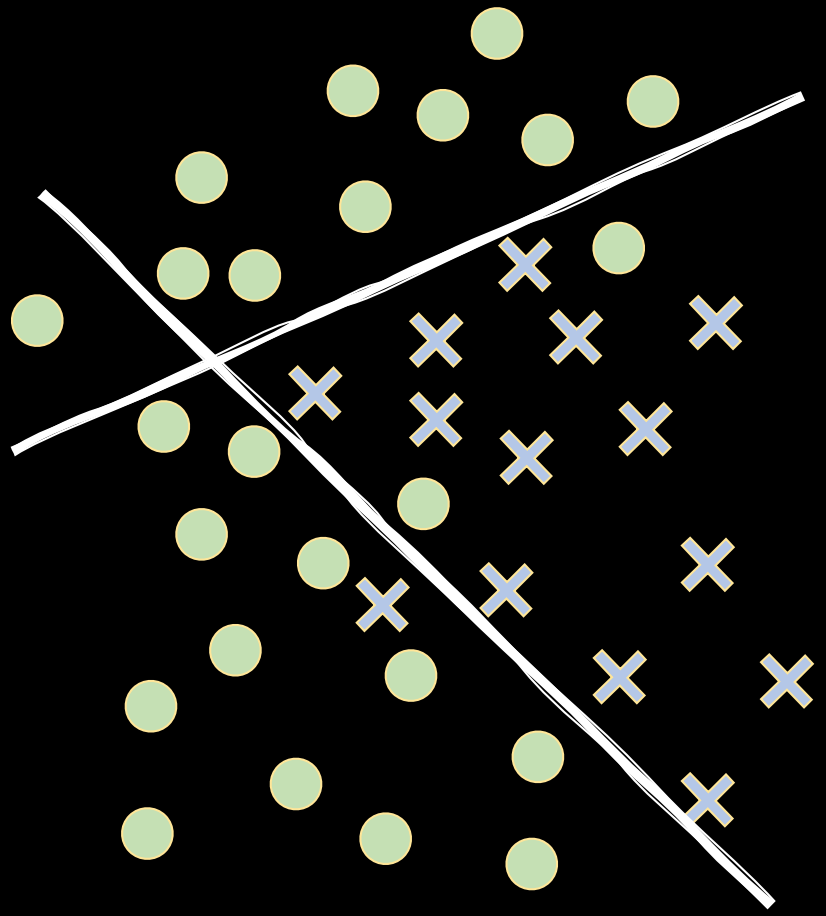
vadba

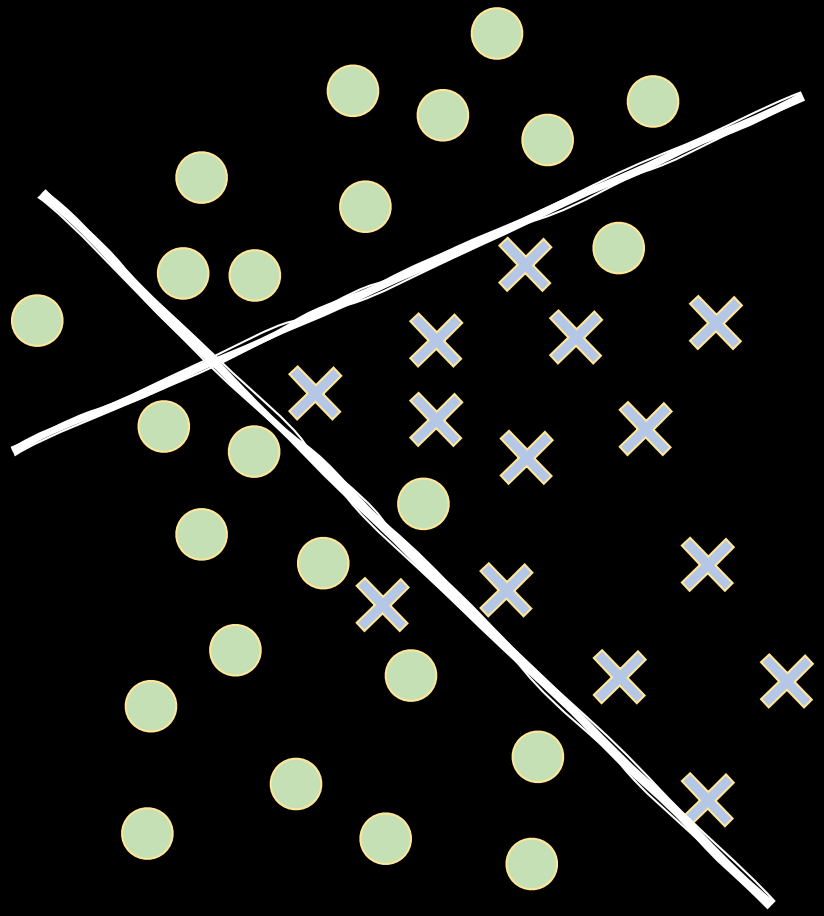
logistična regresija

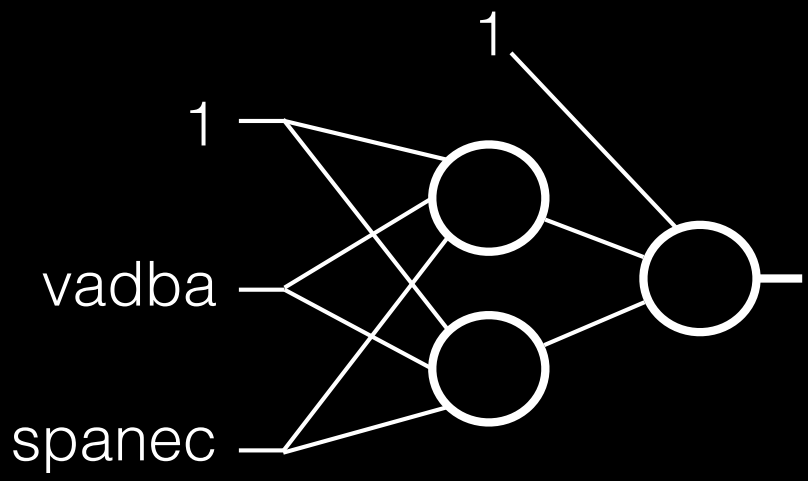



strojno učenje
uteži
(parametri modela)
spanec
podatki
vadba
1
vadba
spanec
w_0
w_1
w_2
$\sigma(\sum)$
P

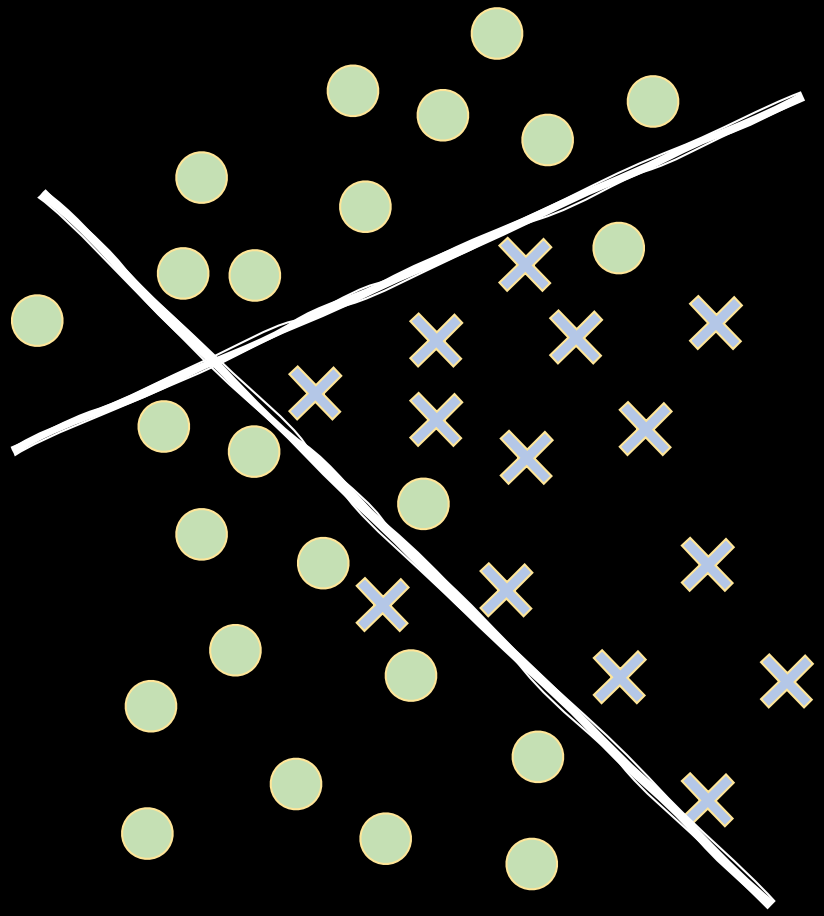




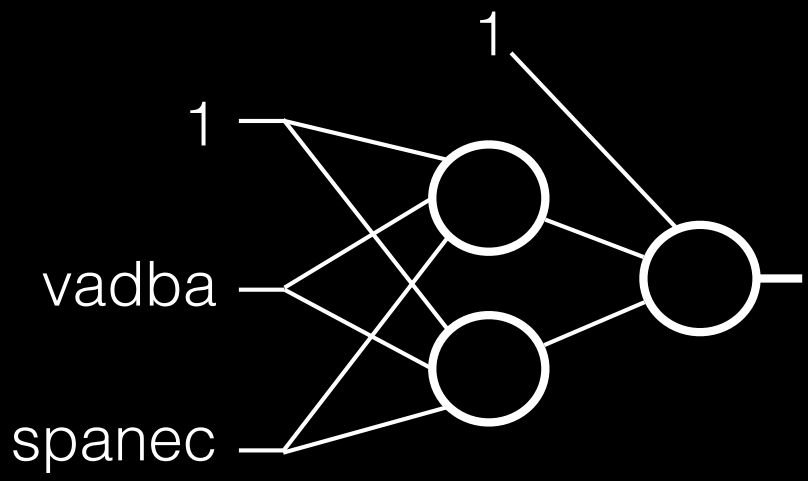




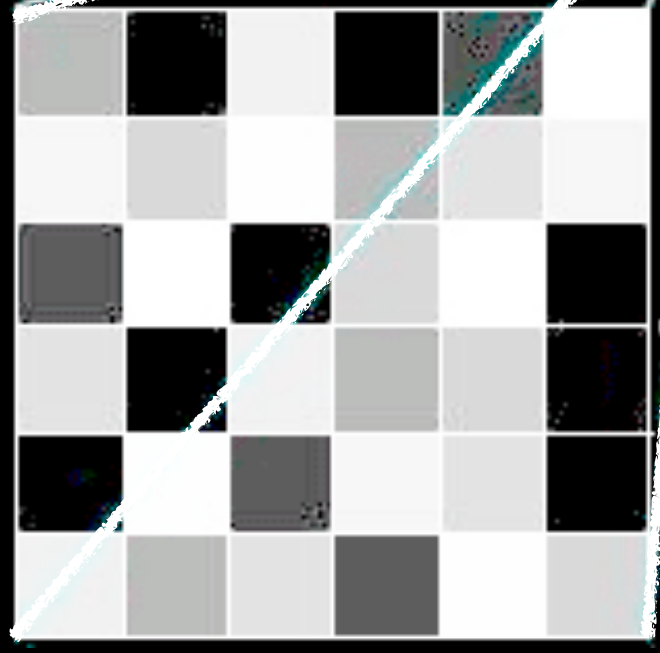
6 + 3 = 9 uteži
(parametrov modela)



nevronska mreža



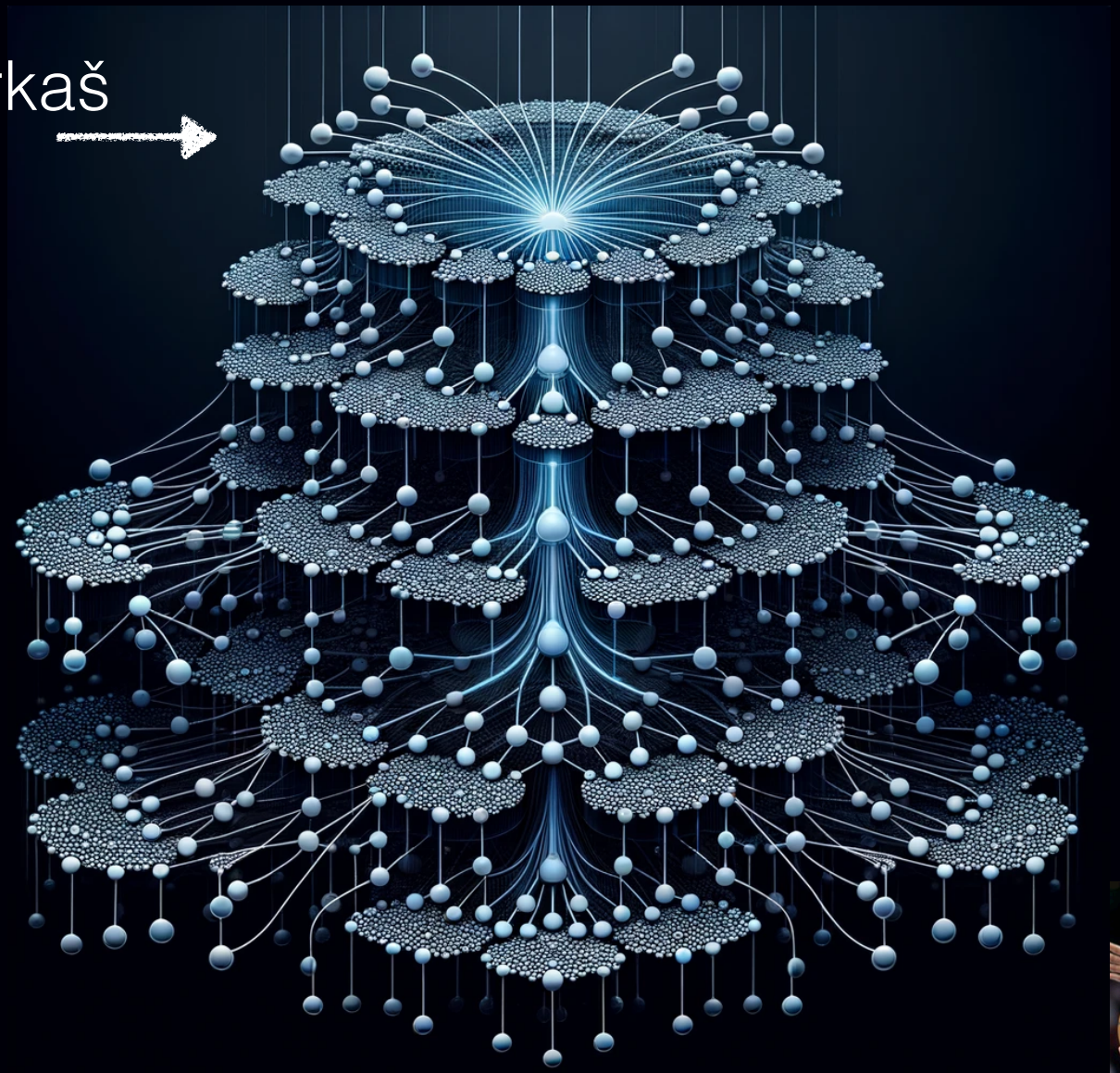
6 + 3 = 9 uteži
(parametrov modela)



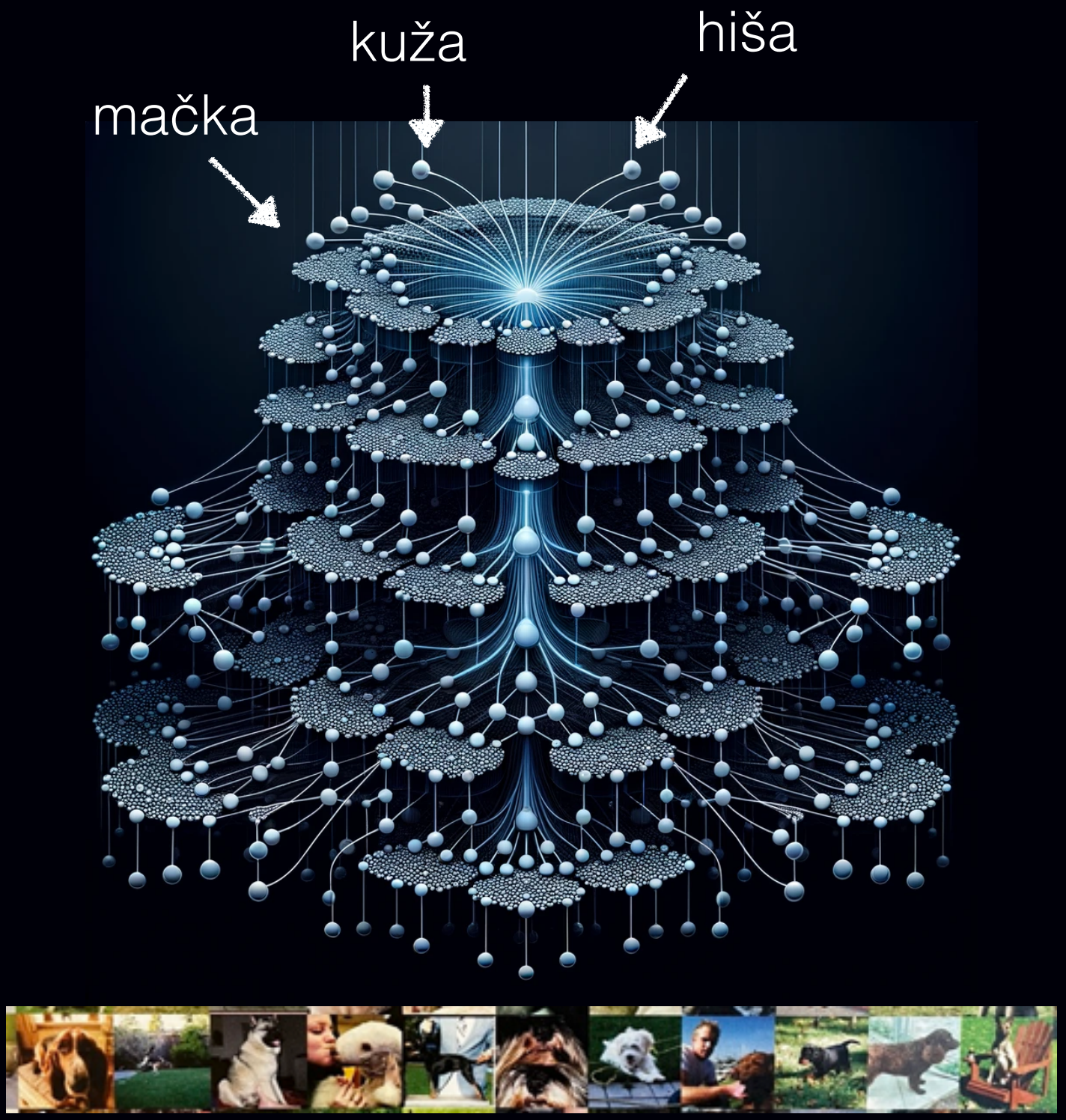
170	238	85	255	221	0
68	136	17	170	119	68
221	0	238	136	0	255
119	255	85	170	136	238
238	17	221	68	119	255
85	170	119	221	17	136

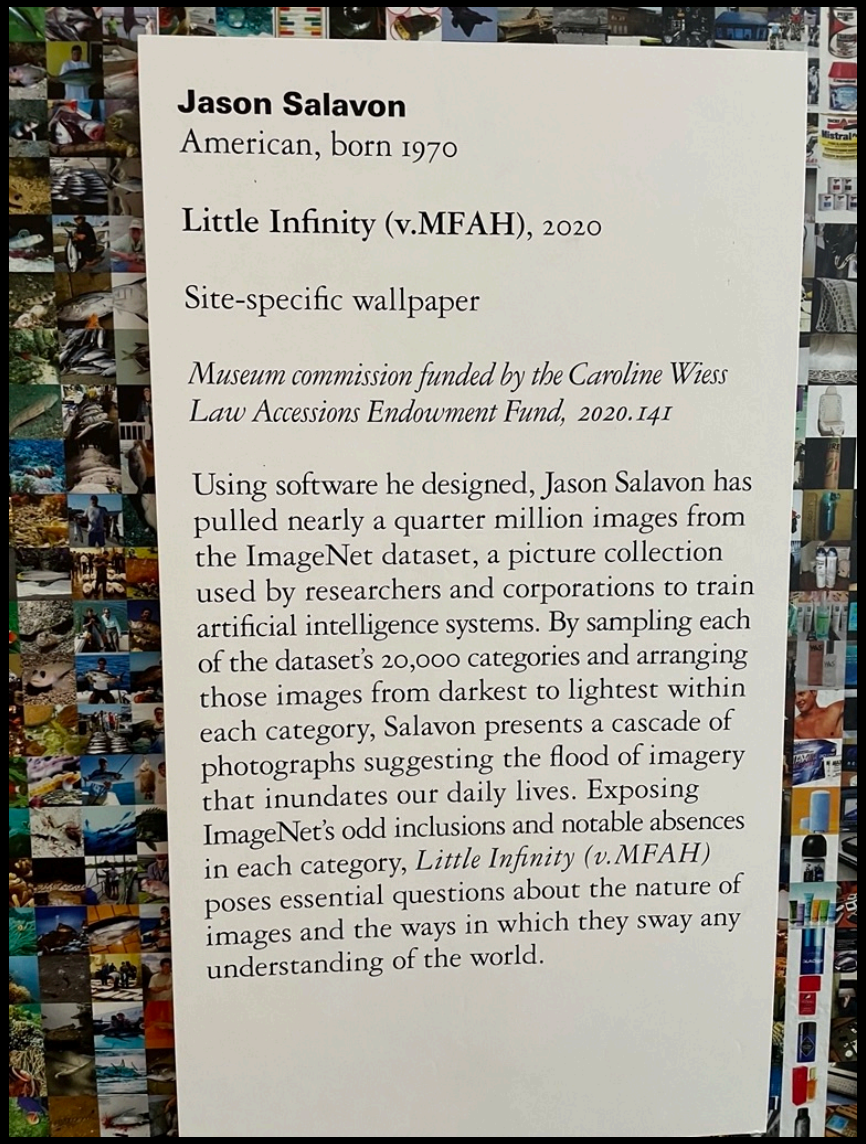
izhod (npr. klasifikacija)

košarkaš



vhod (števila, recimo piksli iz slike)


kuža
hiša
mačka



Jason Salavon
American, born 1970

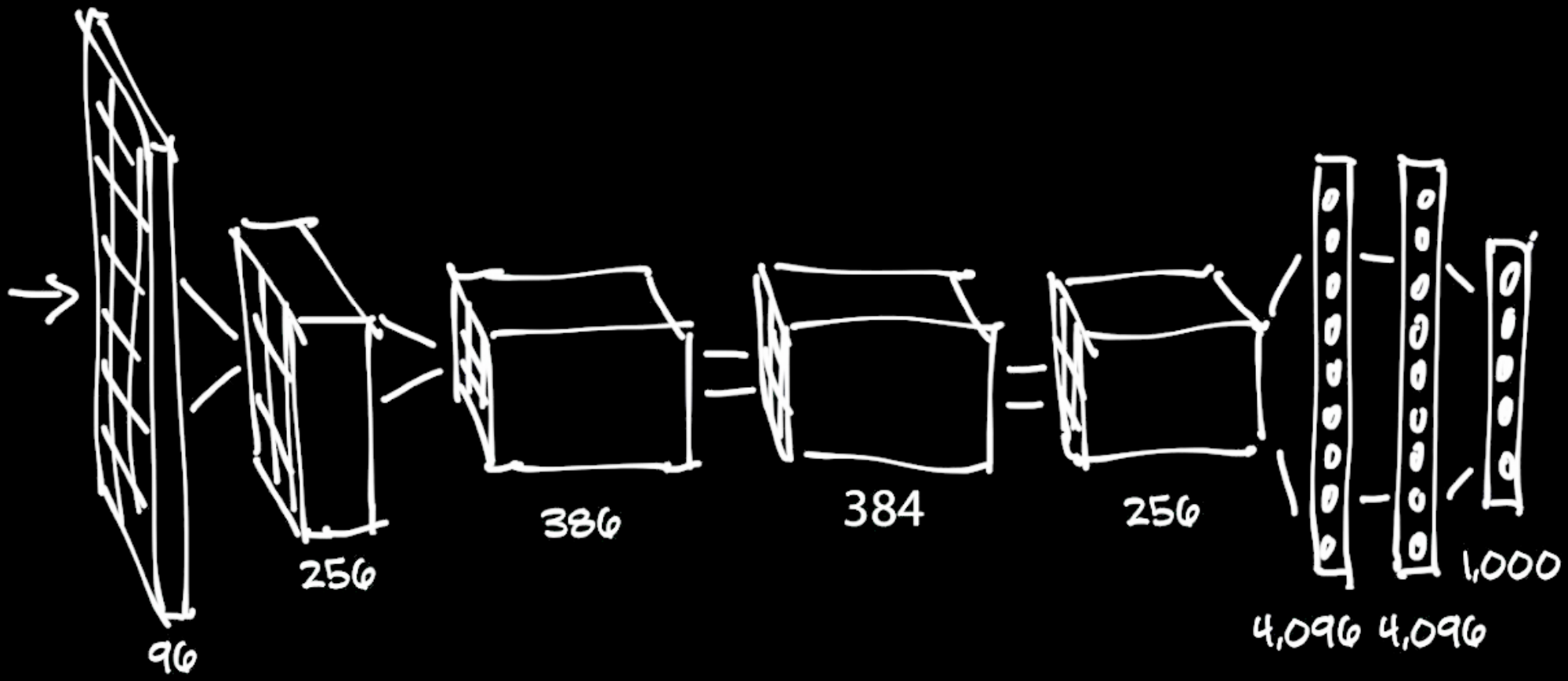
Little Infinity (v.MFAH), 2020

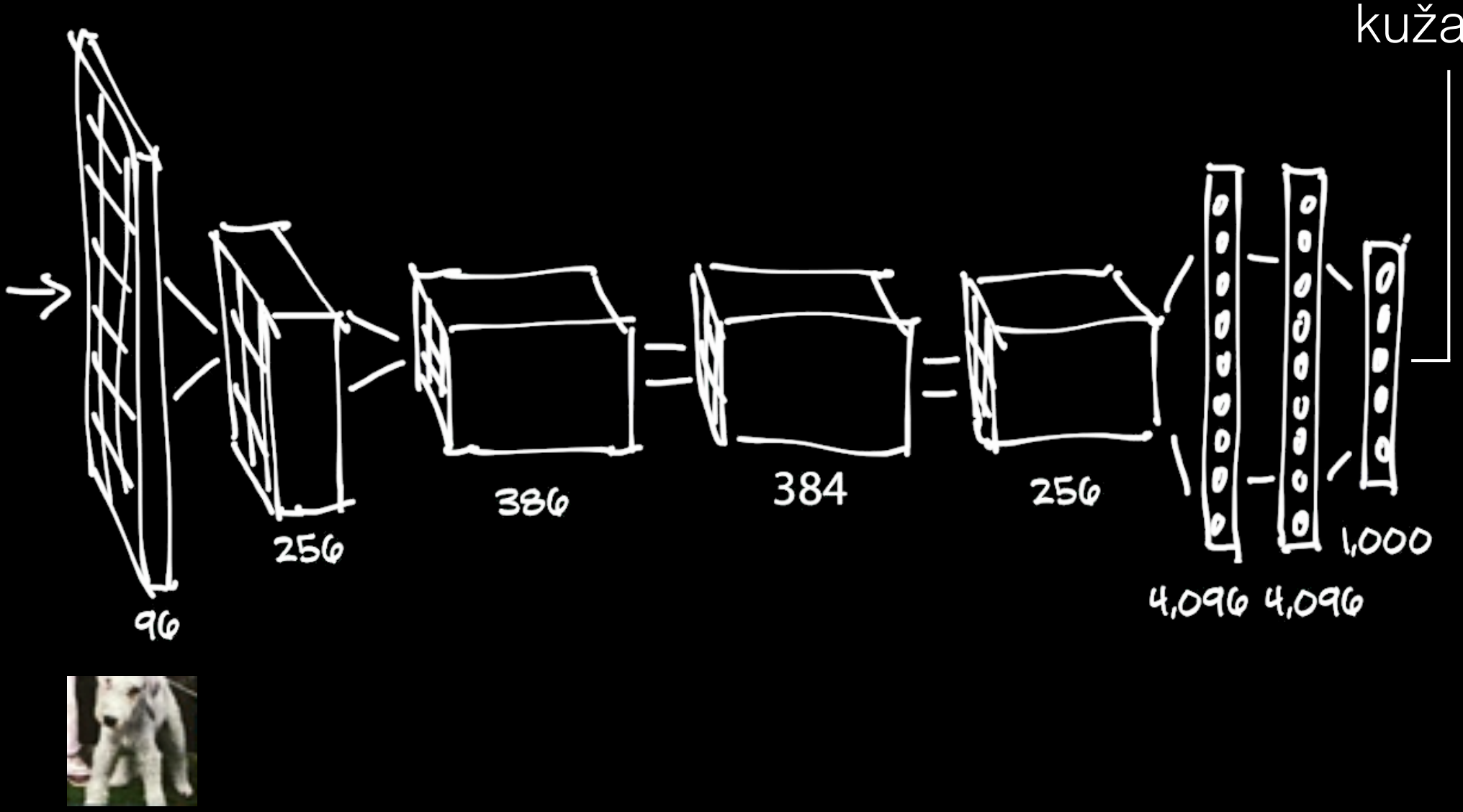
Site-specific wallpaper

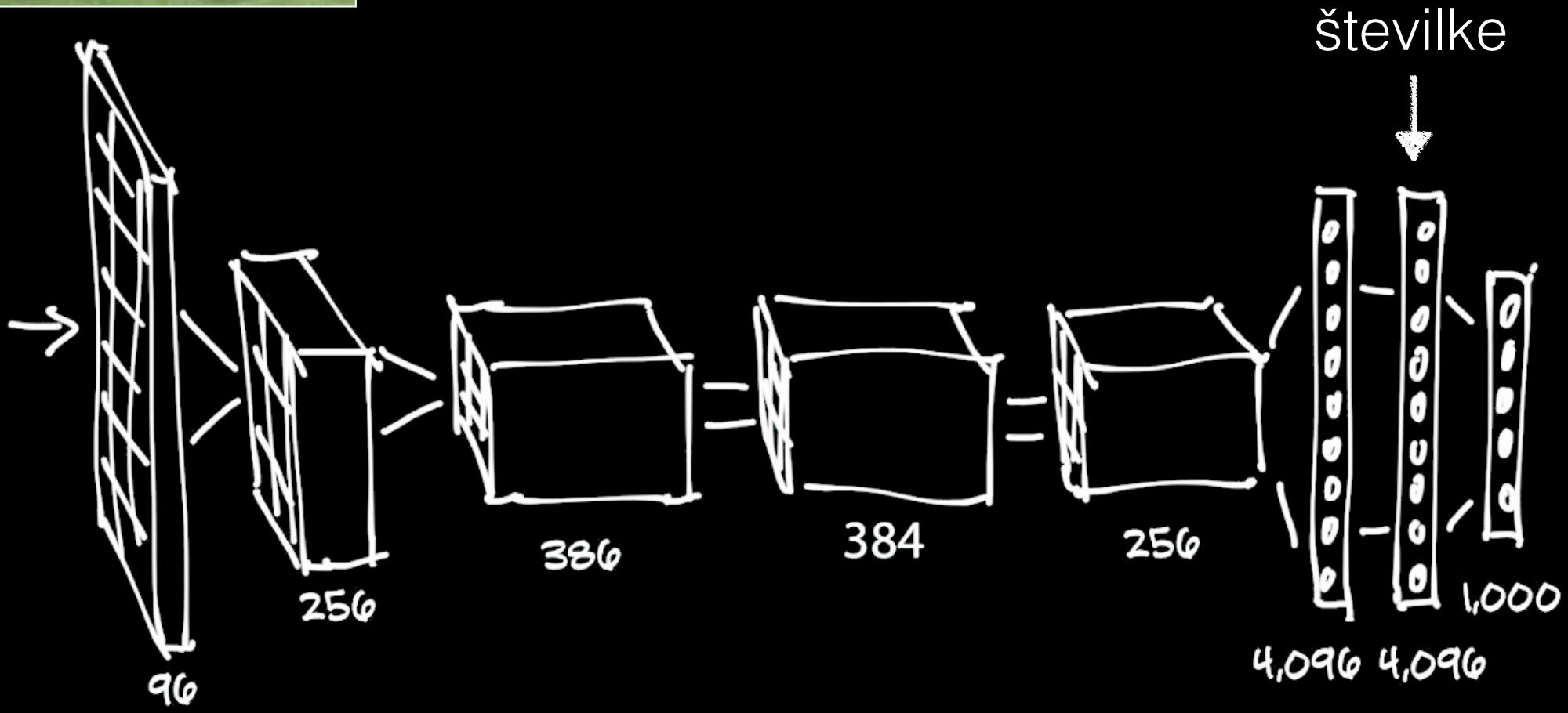
Museum commission funded by the Caroline Wiess Law Accessions Endowment Fund, 2020.141

Using software he designed, Jason Salavon has pulled nearly a quarter million images from the ImageNet dataset, a picture collection used by researchers and corporations to train artificial intelligence systems. By sampling each of the dataset's 20,000 categories and arranging those images from darkest to lightest within each category, Salavon presents a cascade of photographs suggesting the flood of imagery that inundates our daily lives. Exposing ImageNet's odd inclusions and notable absences in each category, *Little Infinity (v.MFAH)* poses essential questions about the nature of images and the ways in which they sway any understanding of the world.

AlexNet (Alex Krizhevsky, Ilya Sutskever, in Geoffrey Hinton, 2012)
60 miljonov parametrov



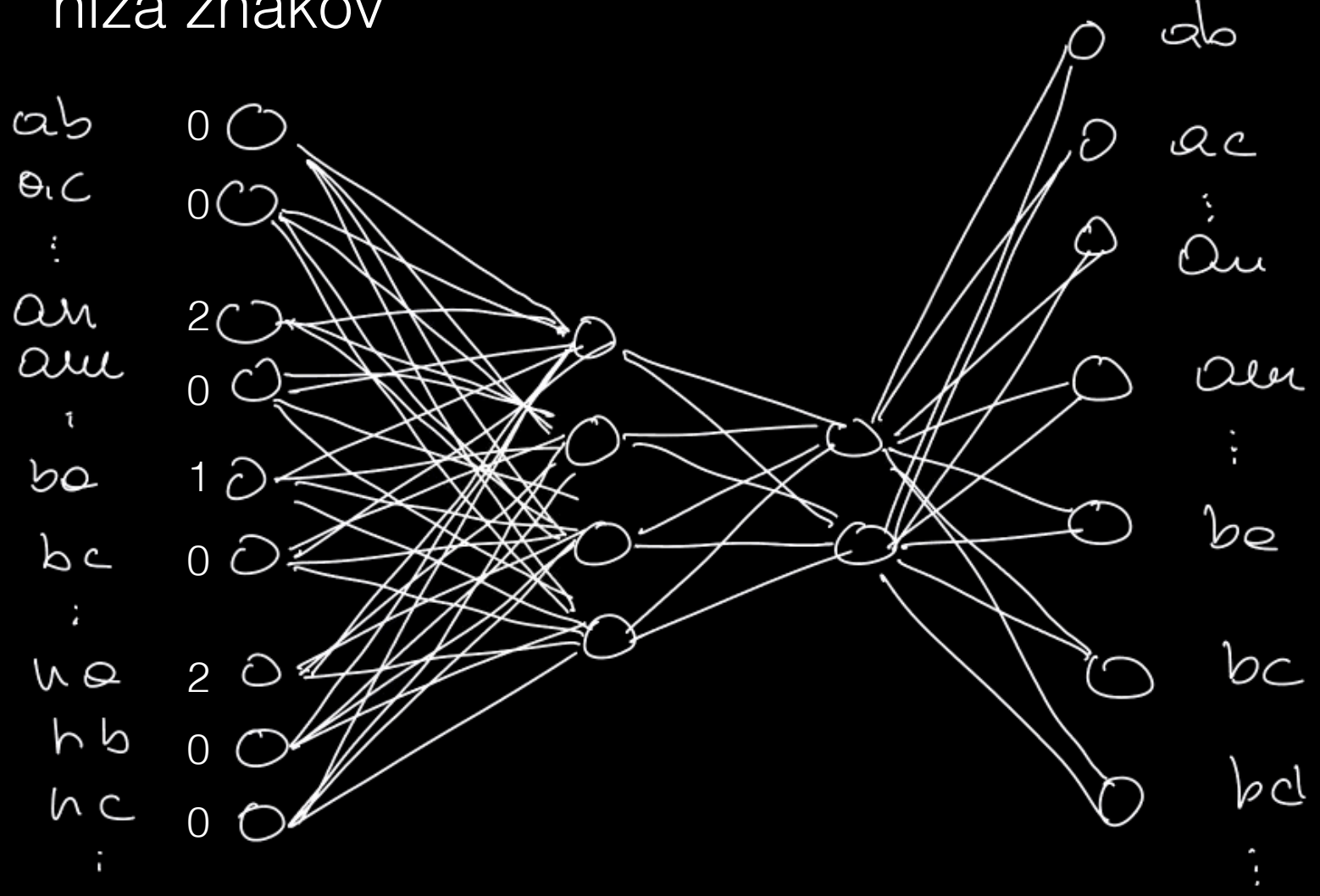

kuža
96
256
386
384
256
4,096
4,096
1,000


številke
96
256
386
384
256
4,096
4,096
1,000

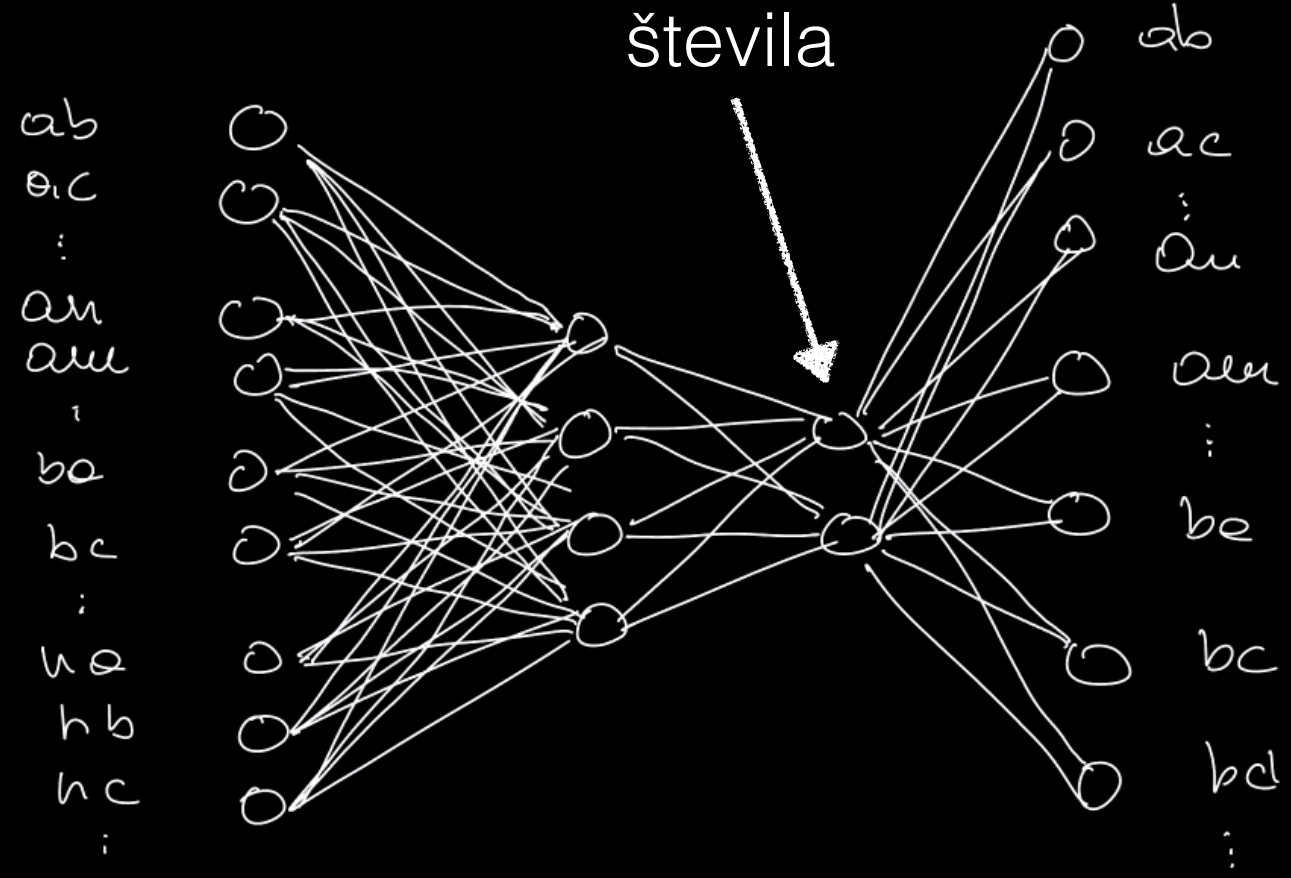
avtomobil
banana
blok
boben
brisača
bučke
čajnik
časopis
čebula
čelada
čelo
črnilnik
črnilo
denarnica
dežnik

številska predstavitev niza znakov

napoved naslednjega znakovnega niza



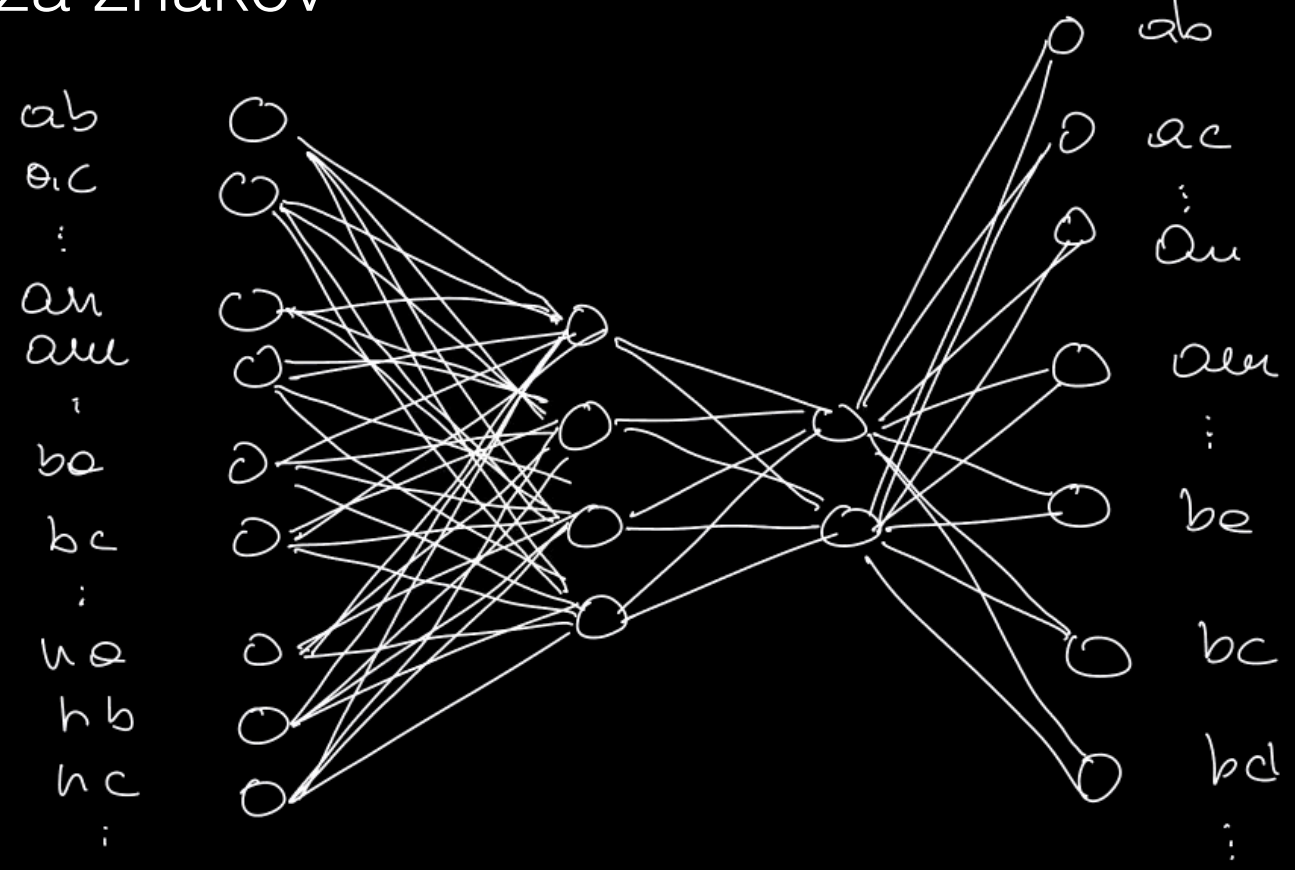
banana – ba, an, na, an, na



Banano je dodal …

številska predstavitev
niza znakov

napoved naslednjega
znakovnega niza

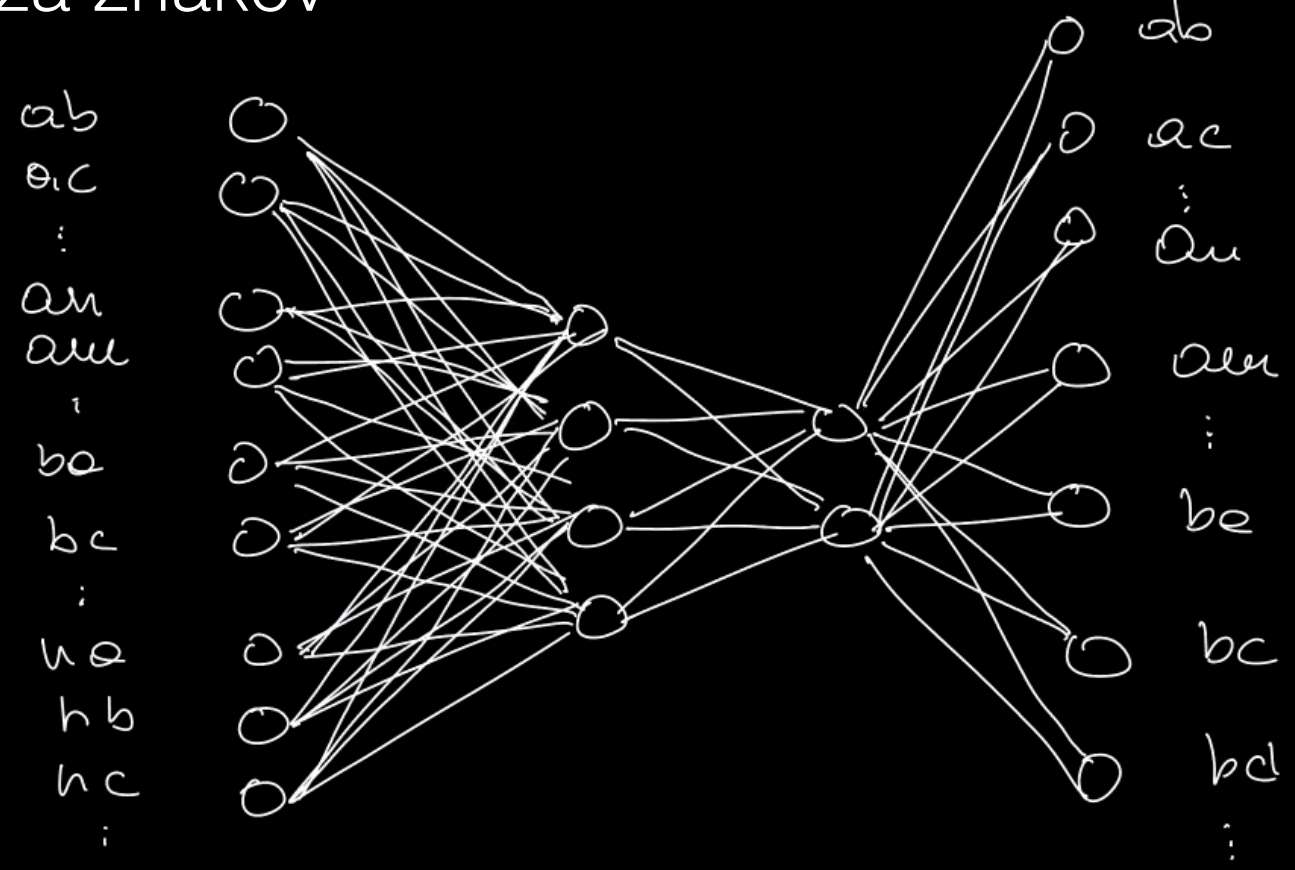


Banano je dodal k …

… jo

številska predstavitev
niza znakov

napoved naslednjega
znakovnega niza

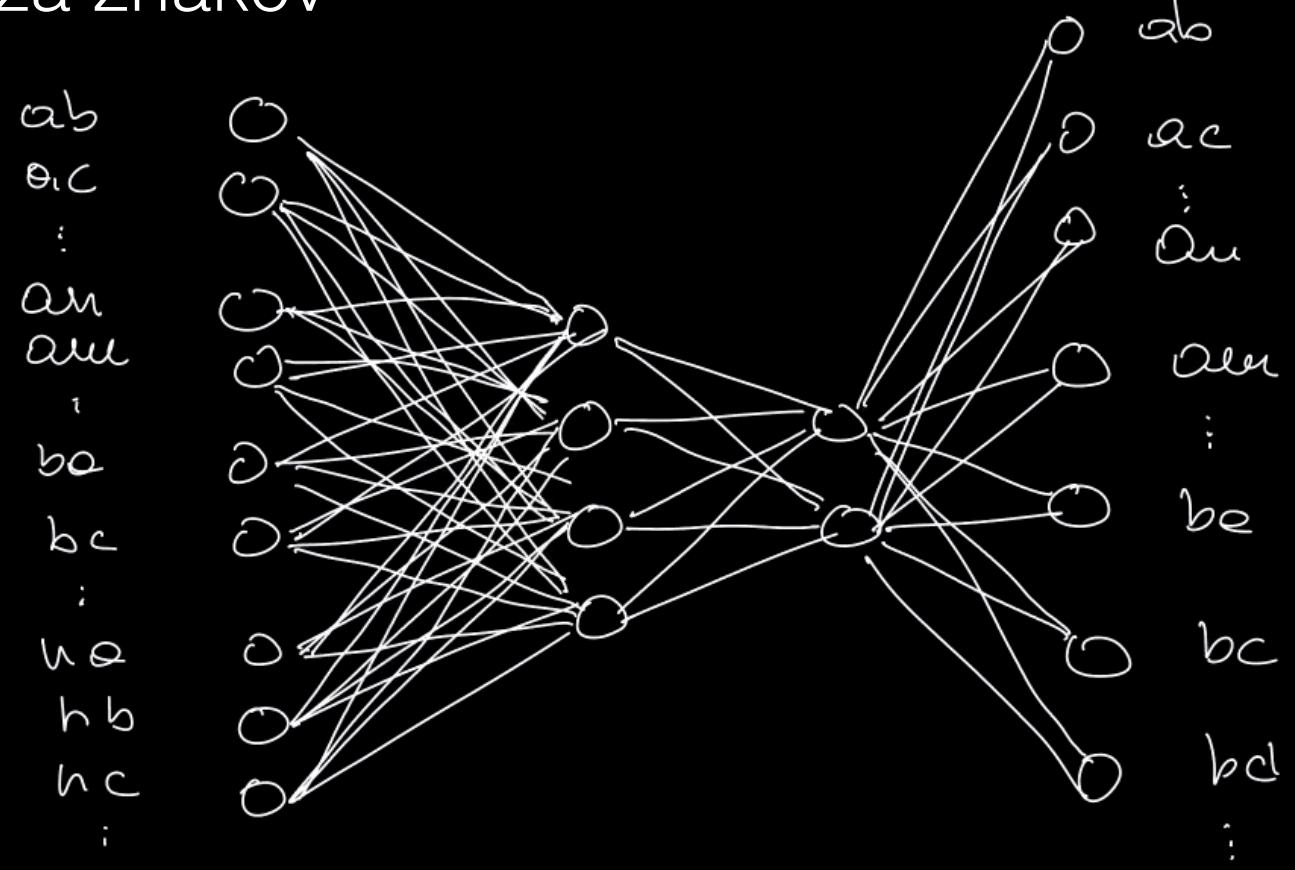


Banano je dodal k jo…

… gu

številska predstavitev
niza znakov

napoved naslednjega
znakovnega niza

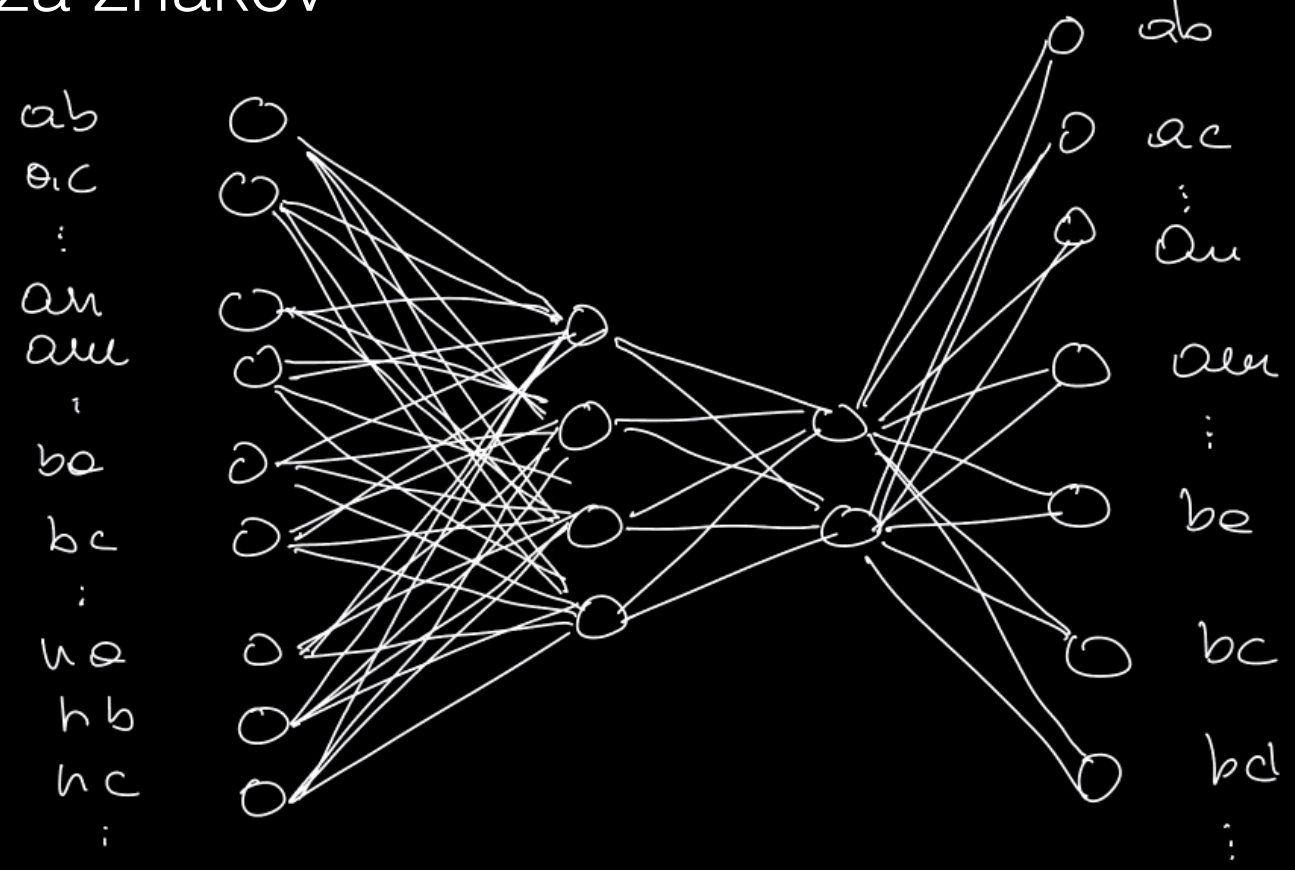


Banano je dodal k jogu…

… rt

številska predstavitev
niza znakov

napoved naslednjega
znakovnega niza

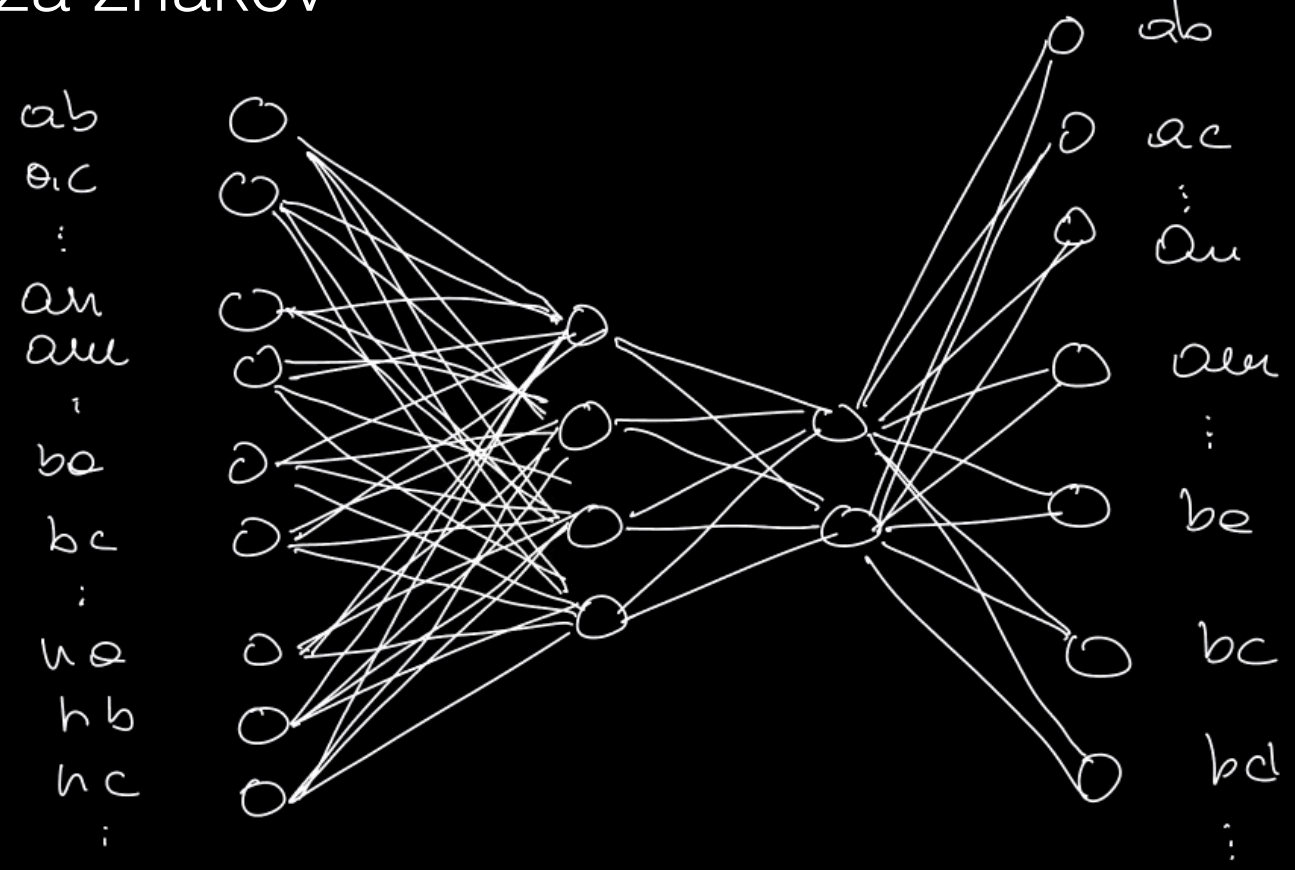


Banano je dodal k jogurt…

… u

številska predstavitev niza znakov

napoved naslednjega znakovnega niza



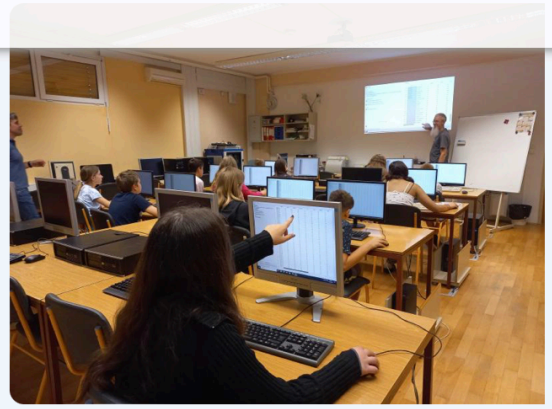
Banano je dodal k jogurtu za zajtrk.

20. junij 2024 / Janez Demšar

Obisk na OŠ Mislinja

Umetna inteligenca ni našla svojega prostora

Beri naprej →



28. maj 2024 / Janez Demšar

Obisk na OŠ Kajetana Koviča Radenci

Dve uri, dve čisto različni zgodbi

Beri naprej →

19. april 2024 / Janez Demšar

Igranje s podatki na Inovativni pedagogiki 5.0

Tako je videti, ko se razživijo zgodovinarji in slavisti.

Beri naprej →

UČNE URE

Primeri učnih ur, ki uporabljajo pristope umetne inteligence v povezavi z redno učno snovjo.

Vse Osnovna šola Srednja šola

Določevalni ključi za skupine živali

Klasifikacijska drevesa in utrjevanje razlikovanja med skupinami živali

naravoslovje, biologija

Družbeno-ekonomske značilnosti držav

Opazovanje držav glede na družbeno-ekonomske značilnosti

geografija

Display a menu