Instead of

artificial intelligence,

let's talk about math and statistics!

KI-ENNA

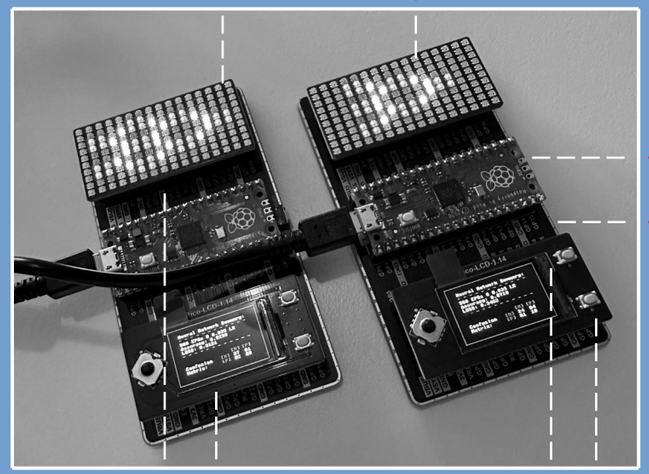
(E)IN (N)EURONALES (N)ETZ
ZUM (A)USPROBIEREN

OPEN SOURCE

LERNE PYTHON

TRAINIERE DEINE KI

AB 16+ JAHREN



www.**statistical-thinking**.de
Prof. Dr. Dennis Klinkhammer

Instead of

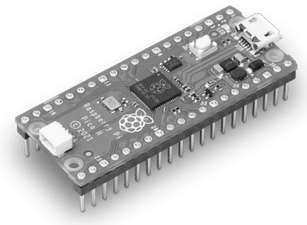
artificial intelligence,

let’s talk about math and statistics!

Instead of

artificial intelligence,

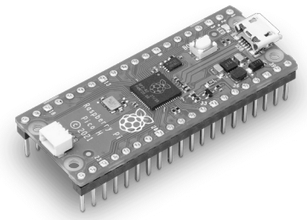
let’s talk about math and statistics!



Instead of

artificial intelligence,

let’s talk about math and statistics!



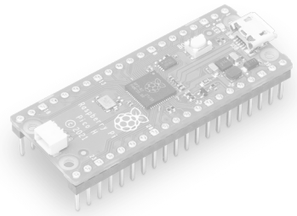
Raspberry Pi Pico

* 133 MHZ * 264 KB RAM * 2 MB FLASH

Instead of

artificial intelligence,

let’s talk about math and statistics!



Raspberry Pi Pico

* 133 MHZ * 264 KB RAM * 2 MB FLASH

DIABETES DATENSATZ

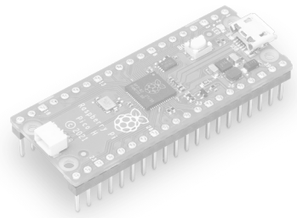
Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
6	148	72	35	0	33.6	627	50	1
1	85	66	29	0	26.6	351	31	0
8	183	64	0	0	23.3	672	32	1
1	89	66	23	94	28.1	167	21	0
0	137	40	35	168	43.1	2288	33	1
5	116	74	0	0	25.6	201	30	0
3	78	50	32	88	31	248	26	1
10	115	0	0	0	35.3	134	29	0
2	197	70	45	543	30.5	158	53	1
8	125	96	0	0	0	232	54	1
4	110	92	0	0	37.6	191	30	0

JOHNS HOPKINS
UNIVERSITY

Instead of

artificial intelligence,

let’s talk about math and statistics!



Raspberry Pi Pico

* 133 MHZ * 264 KB RAM * 2 MB FLASH

DIABETES DATENSATZ

Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
6	148	72	35	0	33.6	627	50	1
1	85	66	29	0	26.6	351	31	0
8	183	64	0	0	23.3	672	32	1
1	89	66	23	94	28.1	167	21	0
0	137	40	35	168	43.1	2288	33	1
5	116	74	0	0	25.6	201	30	0
3	78	50	32	88	31	248	26	1
10	115	0	0	0	35.3	134	29	0
2	197	70	45	543	30.5	158	53	1
8	125	96	0	0	0	232	54	1
4	110	92	0	0	37.6	191	30	0

JOHNS HOPKINS
UNIVERSITY

NEURONALE NETZE

A) **3 Layer** mit insg. **6 Neuronen**

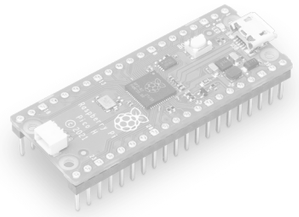
B) **4 Layer** mit insg. **8 Neuronen**

Visualisierung mittels RGB Matrix:

Instead of

artificial intelligence,

let’s talk about math and statistics!



Raspberry Pi Pico

* 133 MHZ * 264 KB RAM * 2 MB FLASH

DIABETES DATENSATZ

Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
6	148	72	35	0	33.6	627	50	1
1	85	66	29	0	26.6	351	31	0
8	183	64	0	0	23.3	672	32	1
1	89	66	23	94	28.1	167	21	0
0	137	40	35	168	43.1	2288	33	1
5	116	74	0	0	25.6	201	30	0
3	78	50	32	88	31	248	26	1
10	115	0	0	0	35.3	134	29	0
2	197	70	45	543	30.5	158	53	1
8	125	96	0	0	0	232	54	1
4	110	92	0	0	37.6	191	30	0

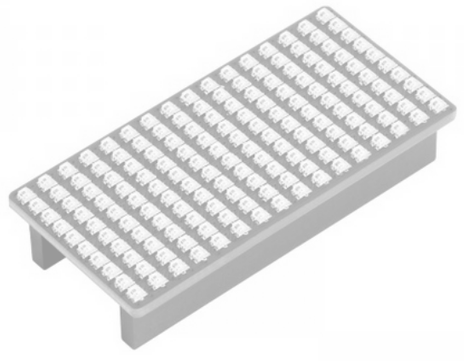
JOHNS HOPKINS
UNIVERSITY

NEURONALE NETZE

A) **3 Layer** mit insg. **6 Neuronen**

B) **4 Layer** mit insg. **8 Neuronen**

Visualisierung mittels RGB Matrix:



Instead of

artificial intelligence,

let’s talk about math and statistics!

EINFACHE BEDIENUNG

Instead of

artificial intelligence,

let’s talk about math and statistics!

[A] 6 NEURONS / TRAIN

EINFACHE BEDIENUNG

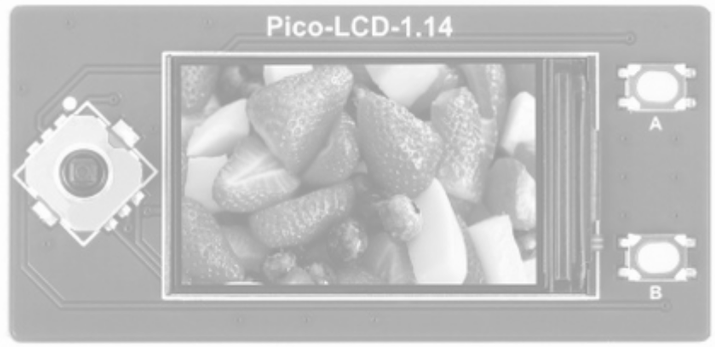
Instead of

artificial intelligence,

let’s talk about math and statistics!

[A] 6 NEURONS / TRAIN

EINFACHE BEDIENUNG



[B] 8 NEURONS / ABOUT

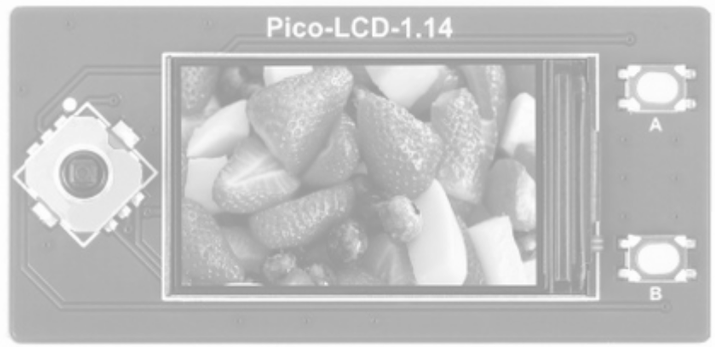
Instead of

artificial intelligence,

let’s talk about math and statistics!

[A] 6 NEURONS / TRAIN

EINFACHE BEDIENUNG



[PUSH] REBOOT

[B] 8 NEURONS / ABOUT

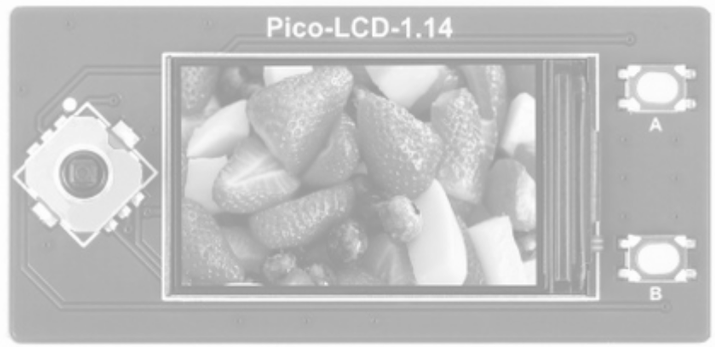
Instead of

artificial intelligence,

let’s talk about math and statistics!

[A] 6 NEURONS / TRAIN

EINFACHE BEDIENUNG



[PUSH] REBOOT

[B] 8 NEURONS / ABOUT

TRAINING / VALIDIERUNG

```
Predictions with 8 neurons:
[[0.9730927, 0.1017353, 0.06202335, 0.4572562, 0.1103432, 0.05771559, 0.7471498, 0.8194352, 0.2919307, 0.3960132, 0.5808029, 0.9760417, 0.2294444, 0.165619
5, 0.06917126, 0.1052484, 0.8611004, 0.05771559, 0.3303518, 0.2326374, 0.71048, 0.543425, 0.2801571, 0.1010159, 0.0674166, 0.4290749, 0.05771559, 0.9254408
, 0.09566004, 0.09817339, 0.2696396, 0.2201122, 0.1122275, 0.4726285, 0.08007254, 0.818479, 0.4317611, 0.06139551, 0.3807044]]
[1, 0, 0, 0, 0, 0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0]
Accuracy: 0.9230769
Confusion Matrix:
[27, 1]
[2, 9]
```

Instead of

artificial intelligence,

let’s talk about math and statistics!

[A] 6 NEURONS / TRAIN

EINFACHE BEDIENUNG

[PUSH] REBOOT

[B] 8 NEURONS / ABOUT

TRAINING / VALIDIERUNG

```
Predictions with 8 neurons:
[[0.9730927, 0.1017353, 0.06202335, 0.4572562, 0.1103432, 0.05771559, 0.7471498, 0.8194352, 0.2919307, 0.3960132, 0.5808029, 0.9760417, 0.2294444, 0.165619
5, 0.06917126, 0.1052484, 0.8611004, 0.05771559, 0.3303518, 0.2326374, 0.71048, 0.543425, 0.2801571, 0.1010159, 0.0674166, 0.4290749, 0.05771559, 0.9254408
, 0.09566004, 0.09817339, 0.2696396, 0.2201122, 0.1122275, 0.4726285, 0.08007254, 0.818479, 0.4317611, 0.06139551, 0.3807044]]
[1, 0, 0, 0, 0, 0, 1, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0]
Accuracy: 0.9230769
Confusion Matrix:
[27, 1]
[2, 9]
```

Instead of

artificial intelligence,

let's talk about math and statistics!

KI-ENNA

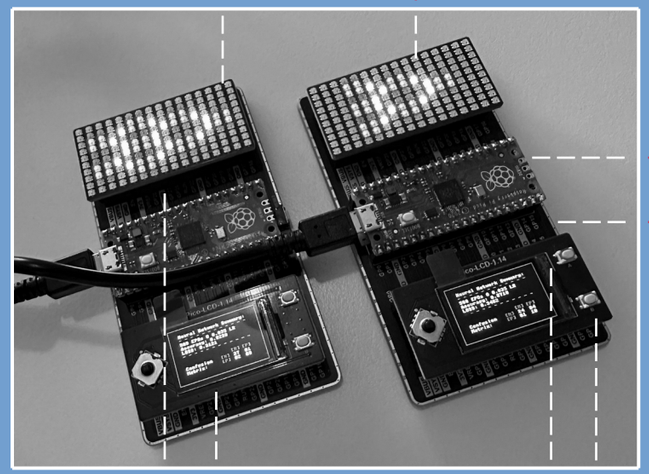
(E)IN (N)EURONALES (N)ETZ
ZUM (A)USPROBIEREN

OPEN SOURCE

LERNE PYTHON

TRAINIERE DEINE KI

AB 16+ JAHREN



www.**statistical-thinking**.de
Prof. Dr. Dennis Klinkhammer