WHAT IS IT ?

1

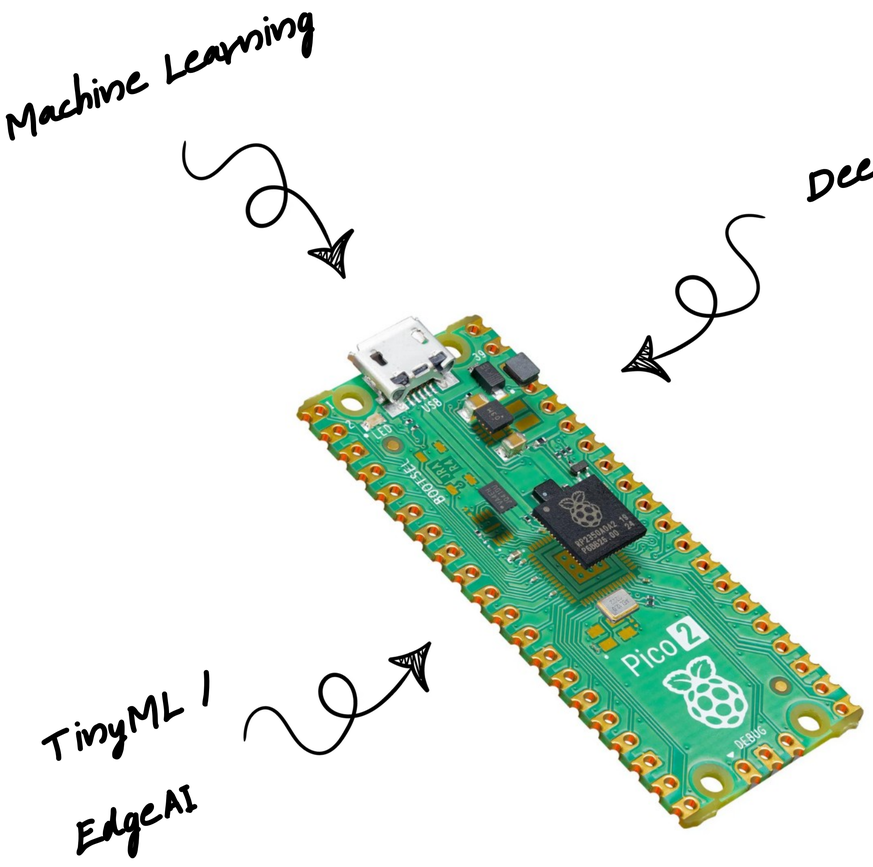
AI-ANNE (2.0)

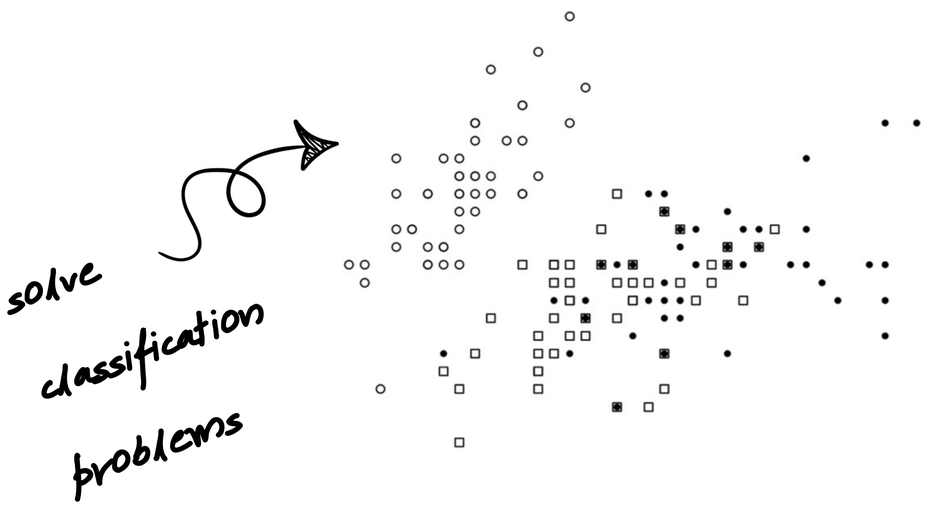
(A) (N)eural (N)et...

AI-ANNE enables **resource-efficient deep learning models** on microcontrollers as embedded systems. Pretrained parameters can be transferred to MicroPython for **offline and real-time monitoring**, or training can take place directly on the microcontroller.

...for (E)xploration

AI-ANNE is also a **didactic tool** for universities, vocational schools and general schools. The aim is to convey the **functionality of neural networks** (activation functions, parameters, etc.) in a simple way using classic **data science** examples..





WHAT IS IT GOOD FOR ?

2

Introduction to Neural Networks

Already equipped **with two functional neural networks**, AI-ANNE can be **flexibly adapted** for practical use as well as for teaching and learning settings. This is about the neurons, layers and functions of neural networks.

HOW DOES IT WORK ?

3

Mathematical Basics

AI-ANNE provides a clear introduction to the mathematical principles of neural networks and explains how they work using **practical examples**. Sigmoid, Tanh, ReLU, Leaky ReLU and Softmax **can be tried out directly as functions**.

4

Code with MicroPython

With AI-ANNE, the mathematical principles can be easily programmed in MicroPython and implemented directly **for use on a microcontroller**. For example, **a matrix can be transposed and functions programmed**.

```
# Leaky ReLU
def leaky_relu(x, alpha=0.01):
    p = []
    for i in range(len(x)):
        if x[i] >= 0:
            p.append(x[i])
        else:
            p.append(alpha * x[i])
    return p
```

Lightweight codes with MicroPython

WHERE CAN I GET IT ?

MIT License. Information and free download:

KINRW

Lernende Systeme
DIE PLATTFORM FÜR KÜNSTLICHE INTELLIGENZ

GitHub

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