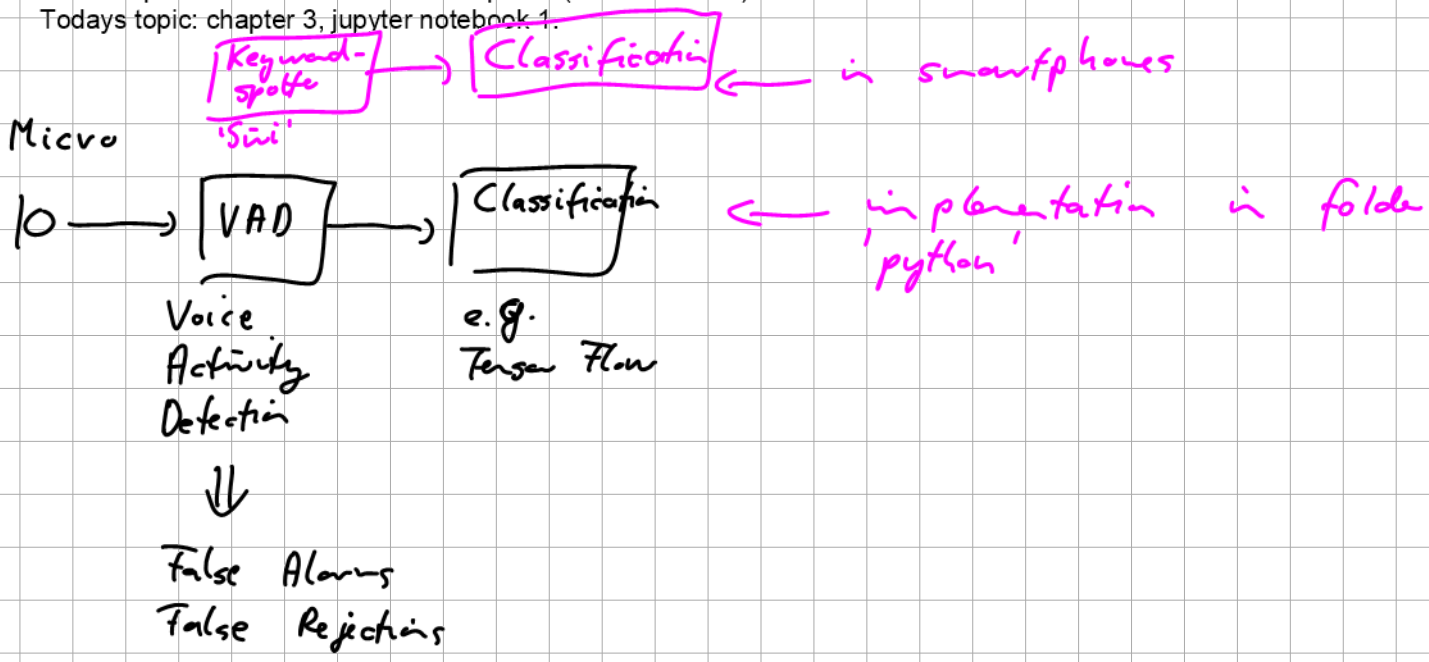
Please update all notebooks from chapter 3 (from the cloud).
Todays topic: chapter 3, jupyter notebook 1.



„Stop" no voice detected ⇒ classification is not triggered
↳ False Rejection

silence or background noise — voice detected — something stupid happens
↳ False alarm

silence — no voice detected — nothing happens

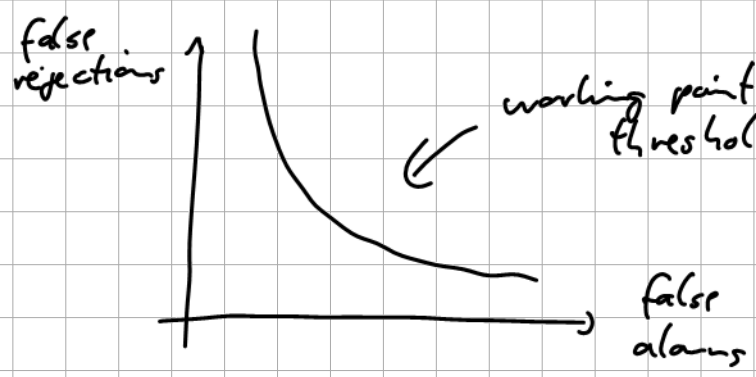
word — voice detected — Confusion Matrix (true word, detected word) += 1

Special case: 2 Classes traffic light green / red

→ classifier detects red traffic lights

	red	green
red	111	5
green	7	97

5 → False „false rejection negatives"
7 → false alarm „false positives"



working point typically depending on some threshold

a) Mic → VAD → Keyword spotter → Classificatio

VAD: silence / voice

Keyword spotter: 'Siri' yes / no

b) Mic → Keyword spotter → Classificatio

Keyword spotter: background noise / other words / Siri

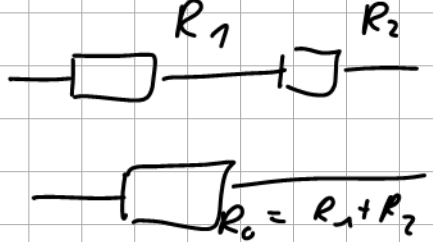
Accuracy paradox

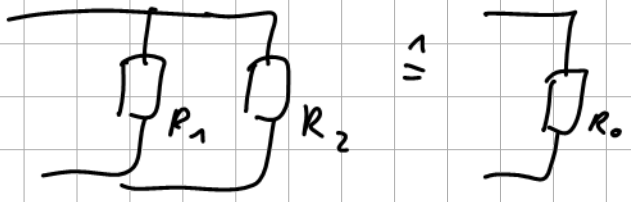
		unbalanced	balanced
I	apes:	356	400
II	bears:	987	400
III	mirrors:	1	400

classifier → II → accuracy = $\frac{987}{987+356+1}$

$= 0.73$

simplest possible classifier
(= constant output)
(= class with highest count)





$$R_0 = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}} \cdot \frac{R_1 R_2}{R_1 R_2} = \frac{R_1 R_2}{R_1 + R_2}$$

$$F_1 = \frac{2}{\frac{1}{X} + \frac{1}{Y}} \quad \frac{XY}{XY} = \frac{2XY}{X+Y}$$