

why 16 and not 4?

digitalisierung und programmierung · auswertung, session 5

agenda

- 1 what your data says
- 2 what it costs

what your data says

same light.
how far does it
get through?



today's results

team

alphabet

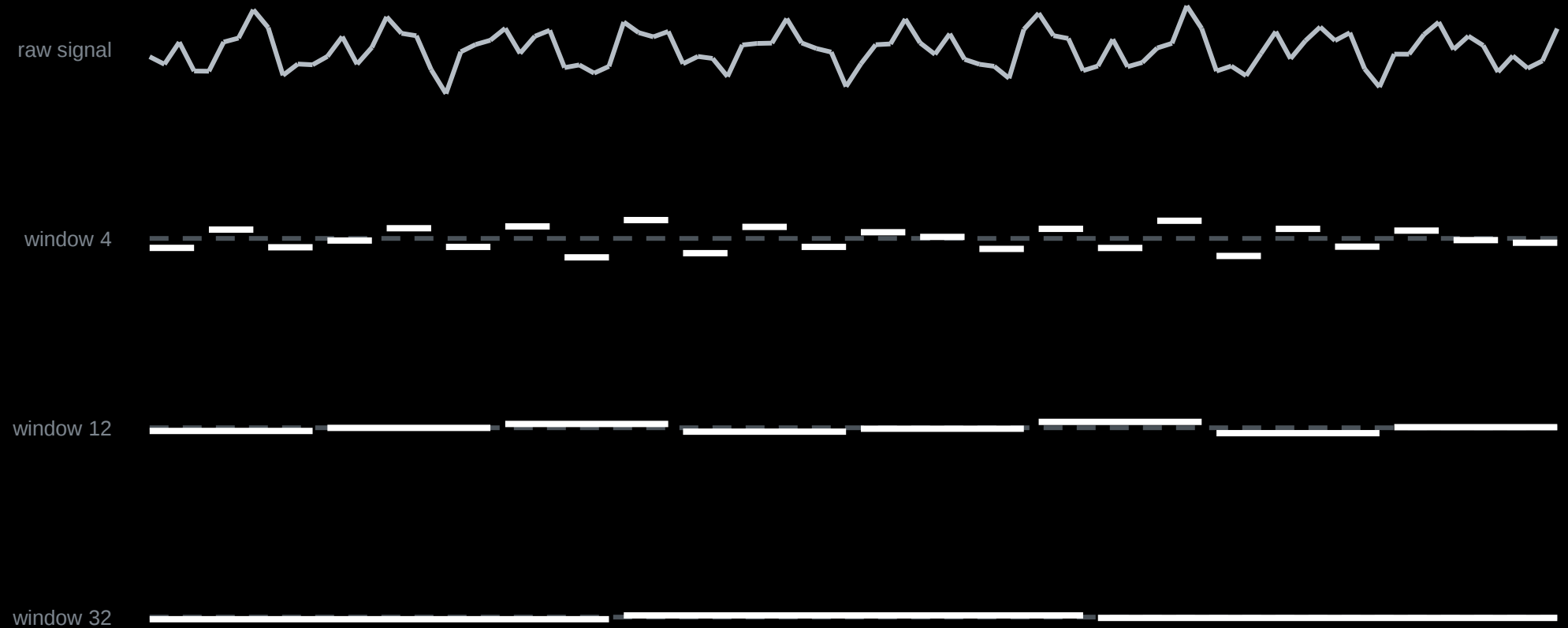
hit rate

what they did about noise

not the code.
the scatter.

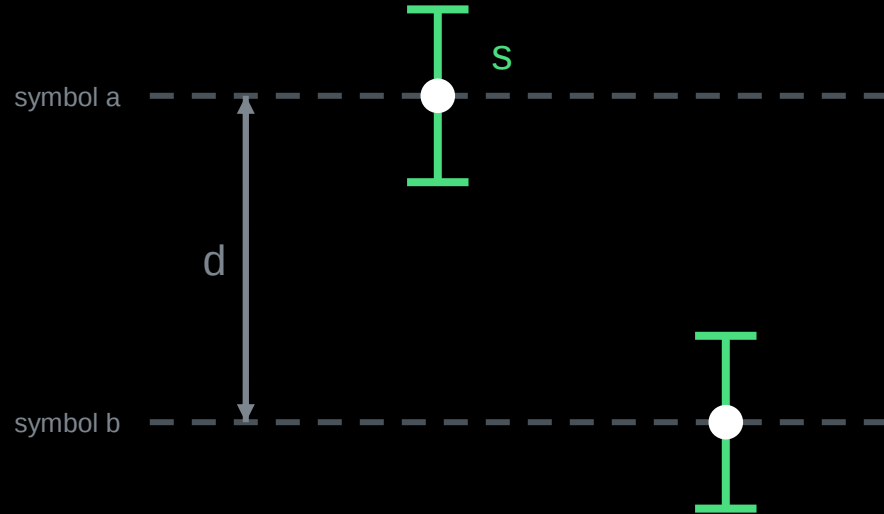
same sensor, same led, same room. the difference is how far your readings move when nothing moves.

the same signal, measured differently

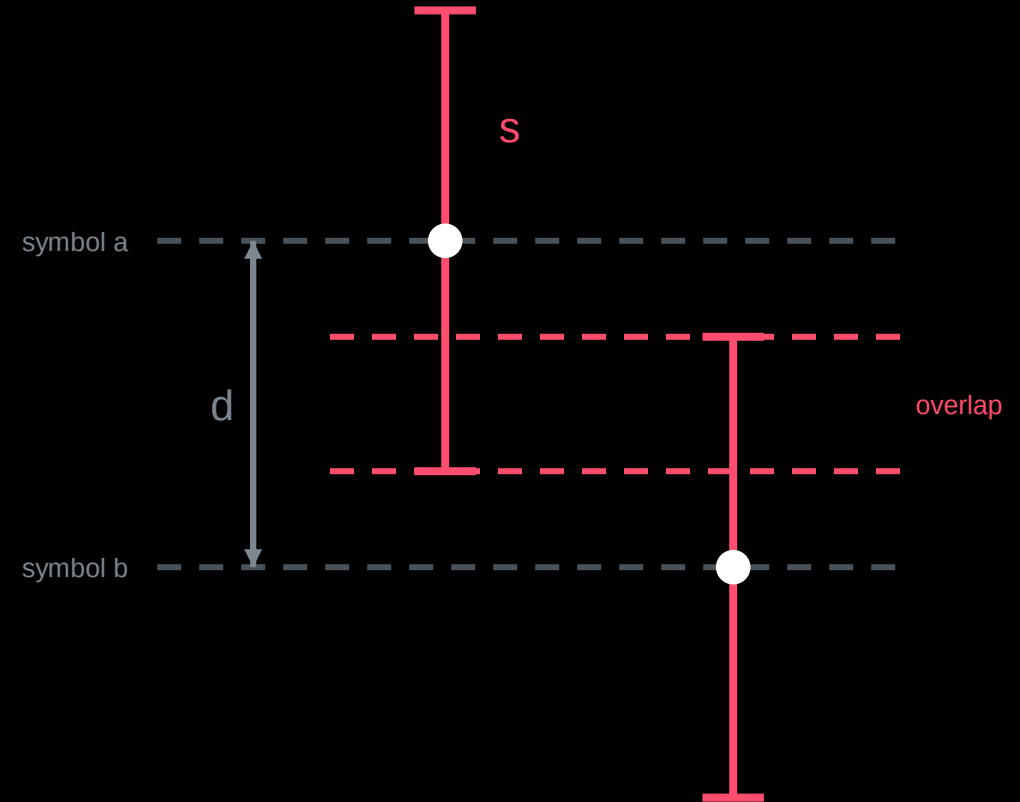


longer windows, calmer values. and fewer of them per second.

what decides your alphabet



every reading lands on its own side



some readings land on the wrong side

it is not the noise. it is the ratio of d to s.

what it costs

two ways to make the ratio better

bigger d

pick colours further apart

fewer symbols fit

use fewer symbols

fewer bits per symbol

aim the light better

free

smaller s

longer integration time

fewer symbols per second

average several readings

fewer symbols per second

block ambient light

free

fix the geometry

free

three of them cost nothing but craft. that is why the optics are allowed.

averaging is not free

```
def read_stable(n=10):  
    values = [sensor.get_clear() for _ in range(n)]  
    return sum(values) / n
```

ten times calmer readings. ten times slower.

more symbols, or faster symbols.
both spend the same margin.

that wall is where challenge 2 begins.

feel the trade-off yourself:

winf-hsos.github.io/lifi-concept-demos

and one honest sentence

we believed:

we measured:

the channel is the only authority in this room.