MACHINE LEARNING &

~~AI~~

REVIEW: BRAINSTORM

WHAT IS DATA SCIENCE?

DATA

$P(y|x)$

TRAINING

RISK

PREDICTION

ANALYSIS

CAUSATION

ASSOCIATION

APPROXIMATE MODELS

Observables

Unobservables

STRUCTURE

REALTIME

BIG DATA

?

STREAMING

SOFTWARE

?

USER INTERF.

AUTOMATION

DATA SCIENCE →

GENERAL TECHNICAL

PROBLEM SOLVING IN

BIZ / ORG

STRATEGIC

FRAUD / RISK / IMPROVEMENTS.

"SHOULD"

MISSION STATEMENT

NOT

"SUPPORT" → ⇒ DATA SCI

NEED, TECHNICAL EXEC.

COMPU SCI

STRATEGIC

COMMUNICATION

AI

ML.

DATA SCIENCE

Automation

BD.

Software

STATS

VS. DATA ANALYSIS

$P(A|B)$

MEAN (X)

INFERENCE

BRAINSTORM:

WHAT DO YOU KNOW ABOUT AI/ML?

NAT. LANG. PROCESSING

⇒ TEXT

TRAILS → TRAING

SELF-DRIVING CARS

$P(y|x)$

SUPERVIZED

CLASSIFICATION
CATEGORY.

REGRESSION
QUANTITY

UNSUPERVIZED

$P(x_1|x_2)$

⇒ MEAN(x)

PARAMETRIC → $y = \ldots x + \ldots x + \ldots$

$P(x)$

NON PARAMETRIC ← BLACK BOX.

⇒ $y = f(x)$

STRUCTURED - TABULAR

UNSTRU'D - NON-TABULAR.

⇒ TEXT

AUDIO/VIDEO

NETWORKS

"NATIVELY"

(NB. EVERYTHING ⇒ STRUCTURED)

AI

DOES NOT EXIST

STRONG

REPLACEMENT

Weak

AUTOMATION

ASSISTANCE

AUGMENTATION

DIGITAL COMPUTER

Symbolic

Programming

Statistical

ML.

LOOM

CAR ROBOT

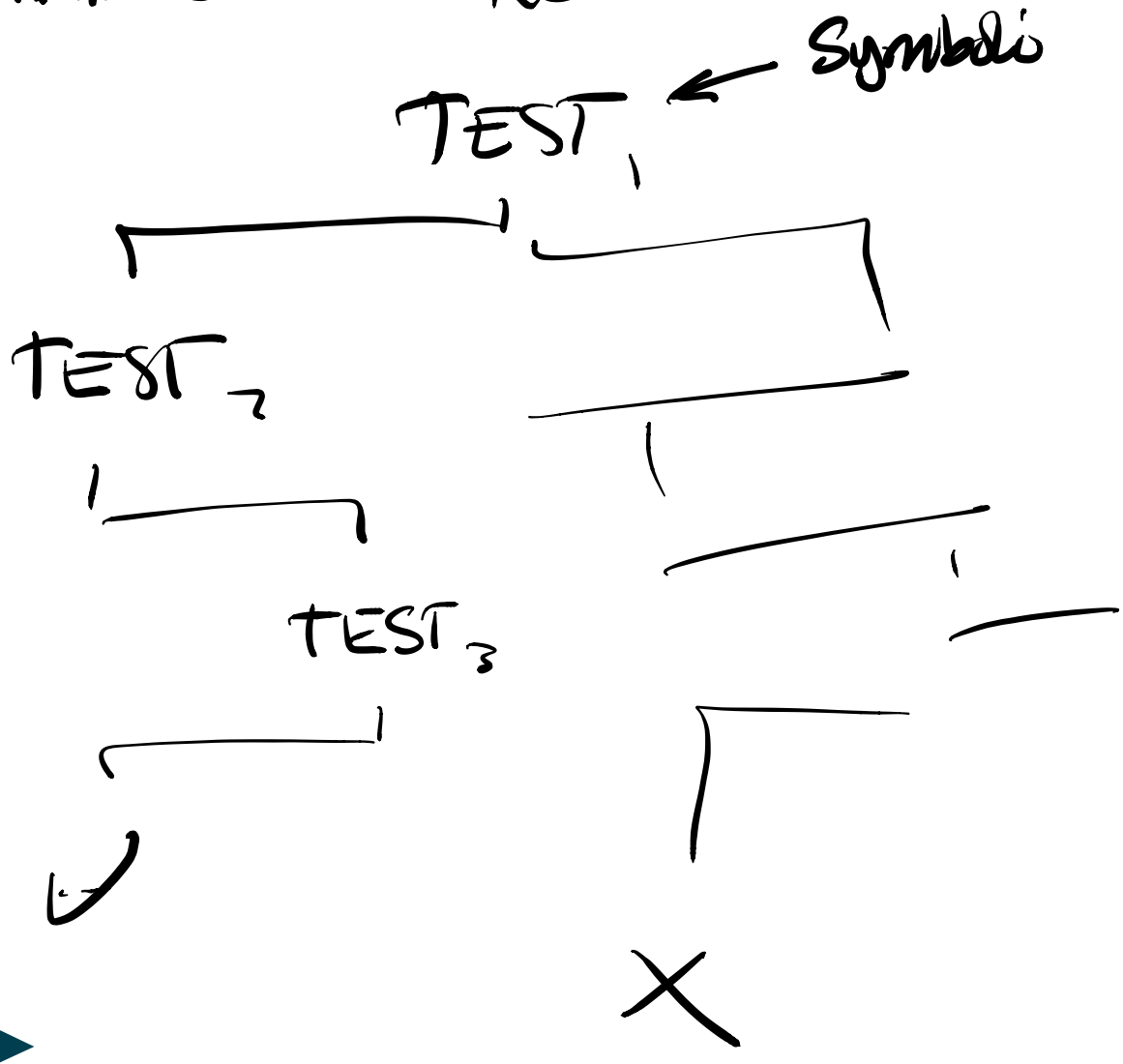
IE.

NO EXAMPLES

```
IF age ≥ 18:
    ALLOWED
ELSE:
    BANNED
```

Symbols

PROGRAMMED D.TREES.



STATISTICAL AI

IF tumor_avg ≥ 18cm:

MALIGN

ELSE:

BENIGN.

OBTAINED FROM DATA.

STRONG vs. WEAK AI

A SYSTEM WHICH BEHAVES AS-IF HUMAN ON GENERAL PROBLEMS WHICH IN HUMANS, REQUIRE INTELLIGENCE

A SYSTEM WHICH BEHAVES AS-IF HUMAN ON SPECIFIC PROBLEMS WHICH IN HUMANS, REQUIRE INTELLIGENCE

WE MIGHT THINK

STRONG = SPECIFIC + SPECIFIC ...

(NO)

SPECIFIC vs. GENERAL

"NARROW" "OPEN"

- SUCCESS IS DEFINED
- RELEVANCE IS DEFINED
- MEASURE RELIABL.
- DATA EXISTS
- RELIABLE SYSTEM TO SOLVE PROBLEM

NO

2> CHALLENGE

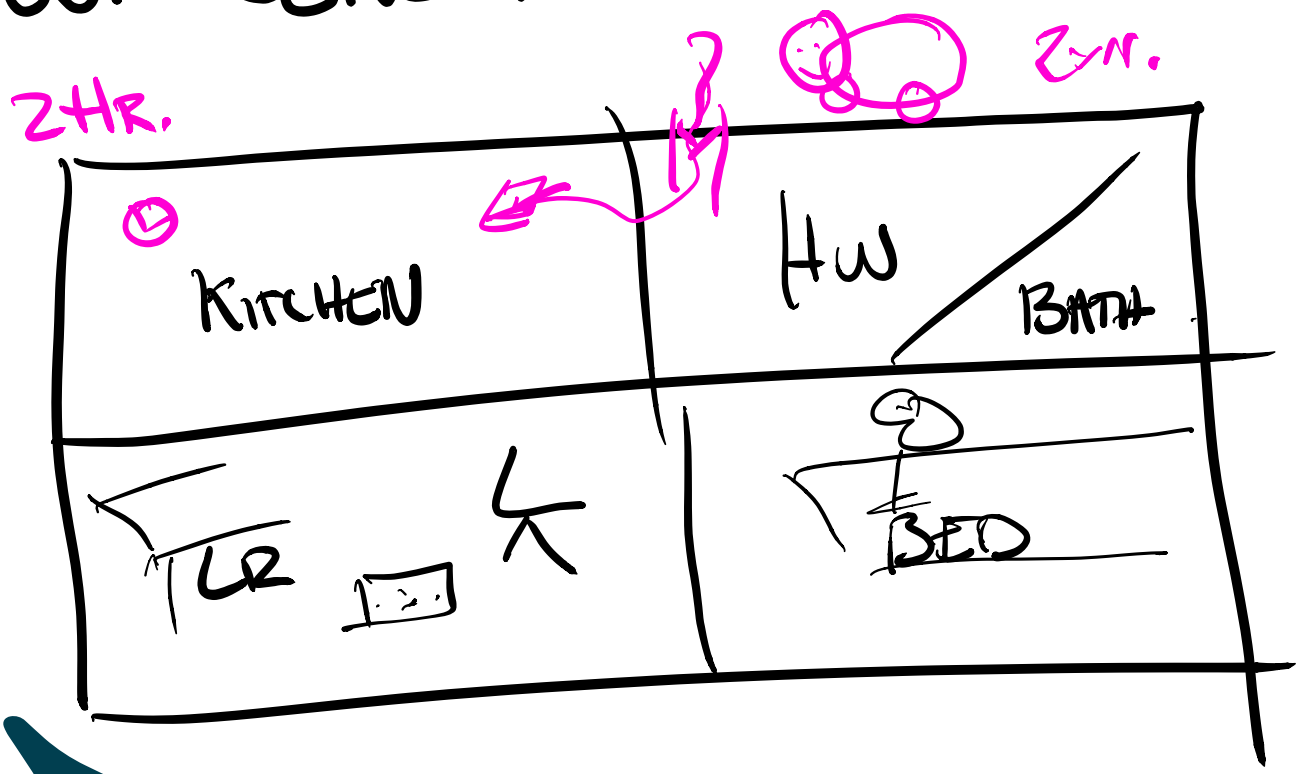
"BUILDING"

ANIMAL INTELLIGENCE IS STRONG.

↳ HUMAN.

INTERAL.

E.G. GENERAL PROBLEM



BORDEM.

EMOTIONAL STATE

ACTION

2) CHANGE THE WORLD

OBSERVE

BODY, ENV, ... → YOU CHANGED THE WORLD (EXPERIMENTS)

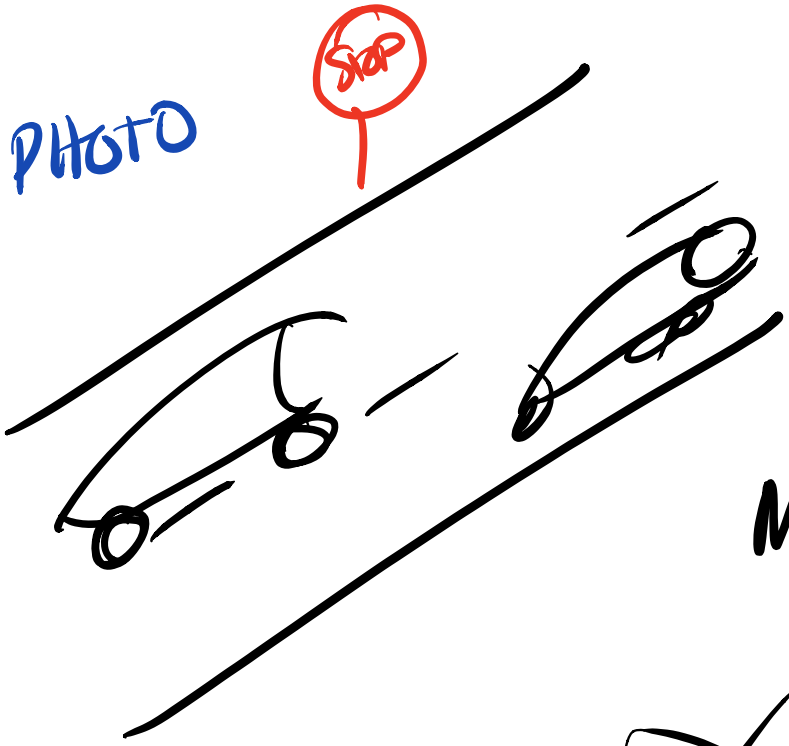
CAUSATION

ASSOCIATION.

SELF-DRIVING CAR. → WEAK

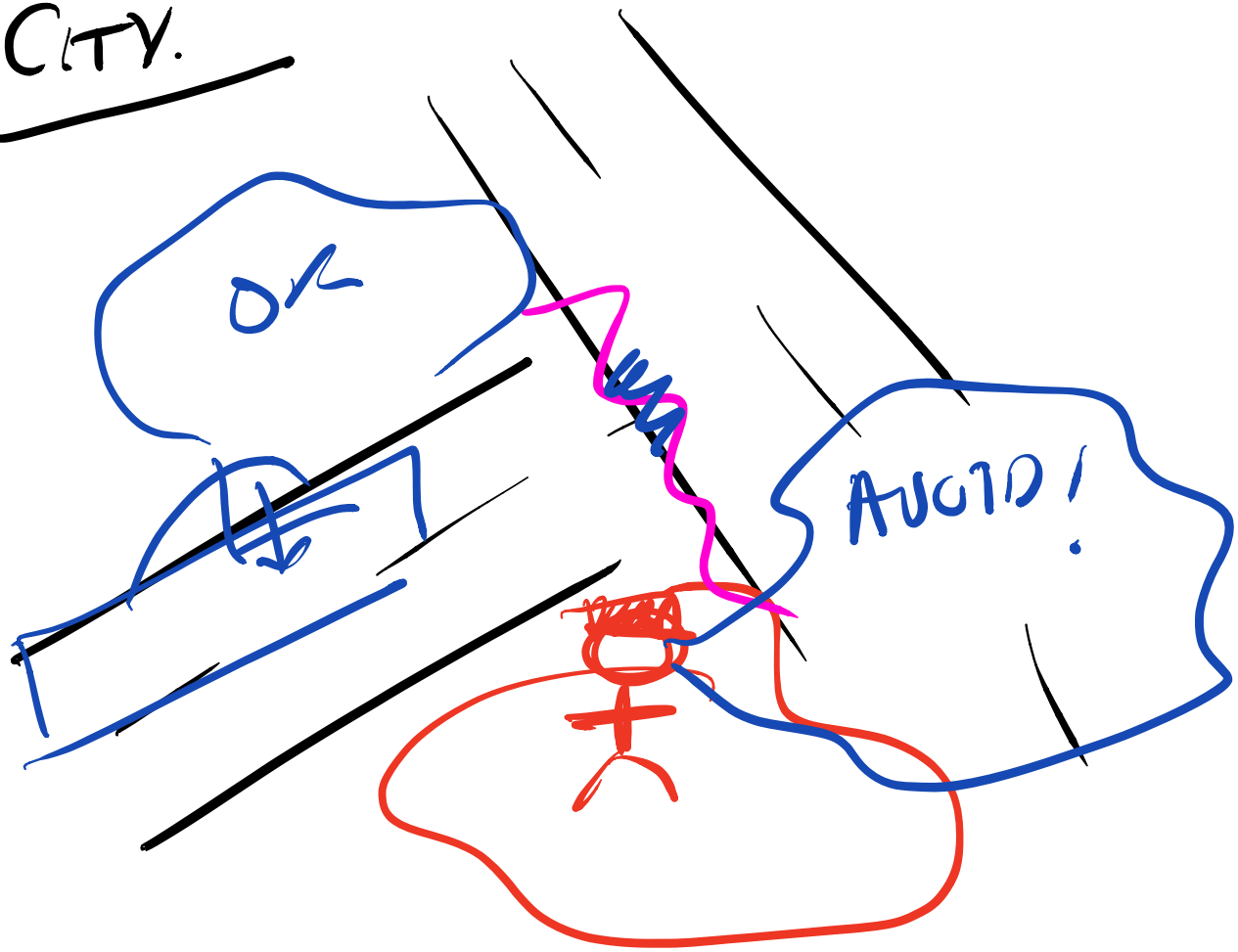
STRONG

PHOTO



MOTOR WAY.

CITY.



Q8

Q8

Q8

Q8

Q8