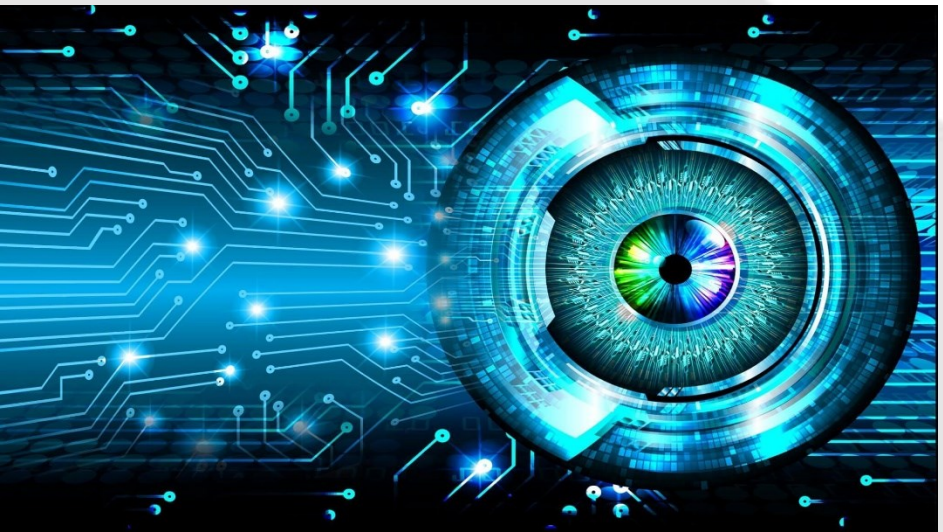
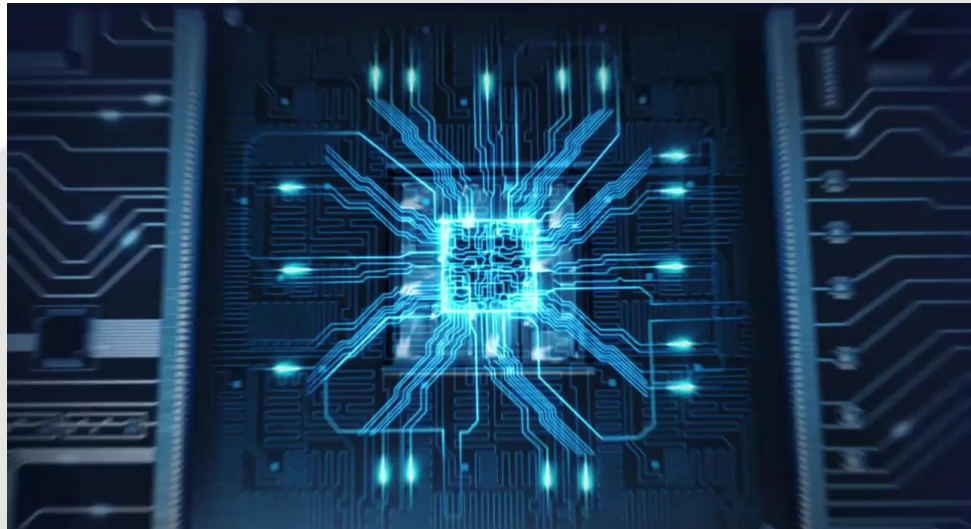
COMPUTER VISION & MACHINE LEARNING





- ASHWIN PHADKE

What Is Computer Vision?

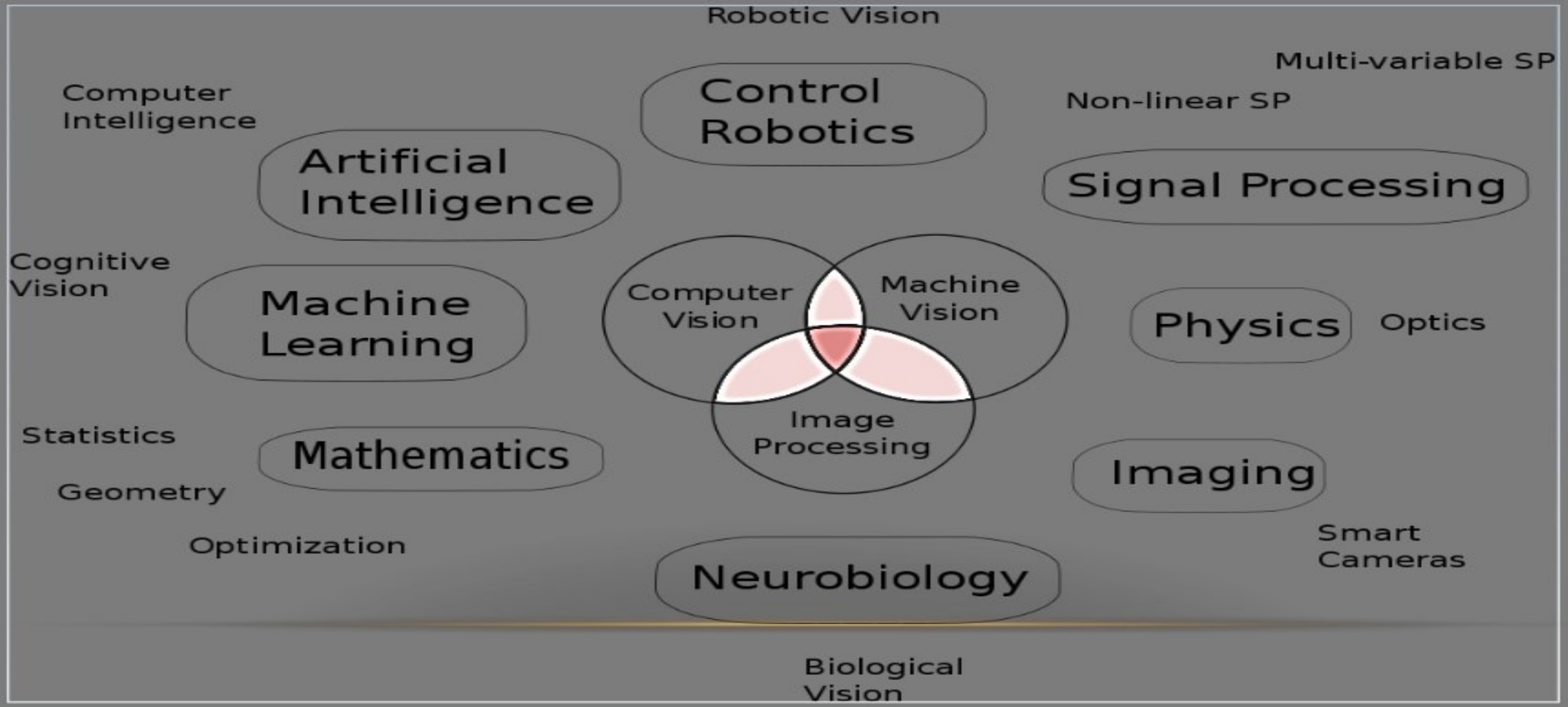
1. Image analysis.
2. Scene Analysis.
3. Image Understanding.
4. Processing acquired data.
5. Data Segmentation and Representation

Who’s better?

The ages old :

HUMAN VS COMPUTER

RELATION BETWEEN COMPUTER VISION AND VARIOUS OTHER FIELDS[



What we do

1. Image Acquisition.
2. Image Processing
3. Image Feature Extraction.
4. Image Data Detection, Recognition and Segmentation .
5. Interpretation.

How we do it

1. Shape
2. Texture
3. Background – Foreground.
4. Color
    1. HSV – Hue , Saturation , Intensity.
    2. RGB - red , Green Blue
    3. LAB – Light , Green to Magenta, Blue to Yello

Do we really see such range of data?

Where's the Mathematics they keep talking about?

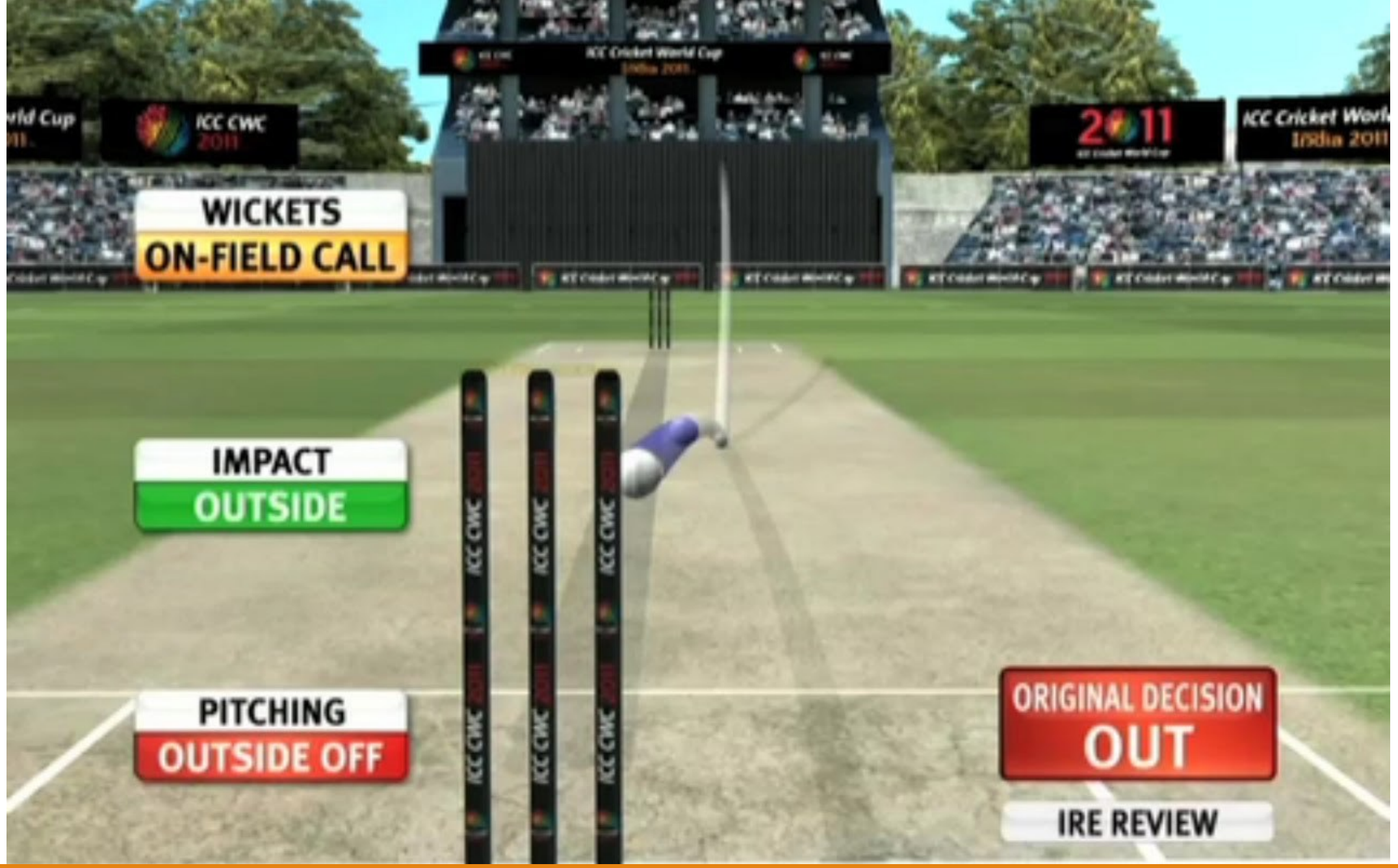
1. Linear algebra
2. Probability and Statistics
3. Calculus
4. Signal Processing
5. Projective geometry

Applications?


DATA
Reads Text from Image
Extracts Data

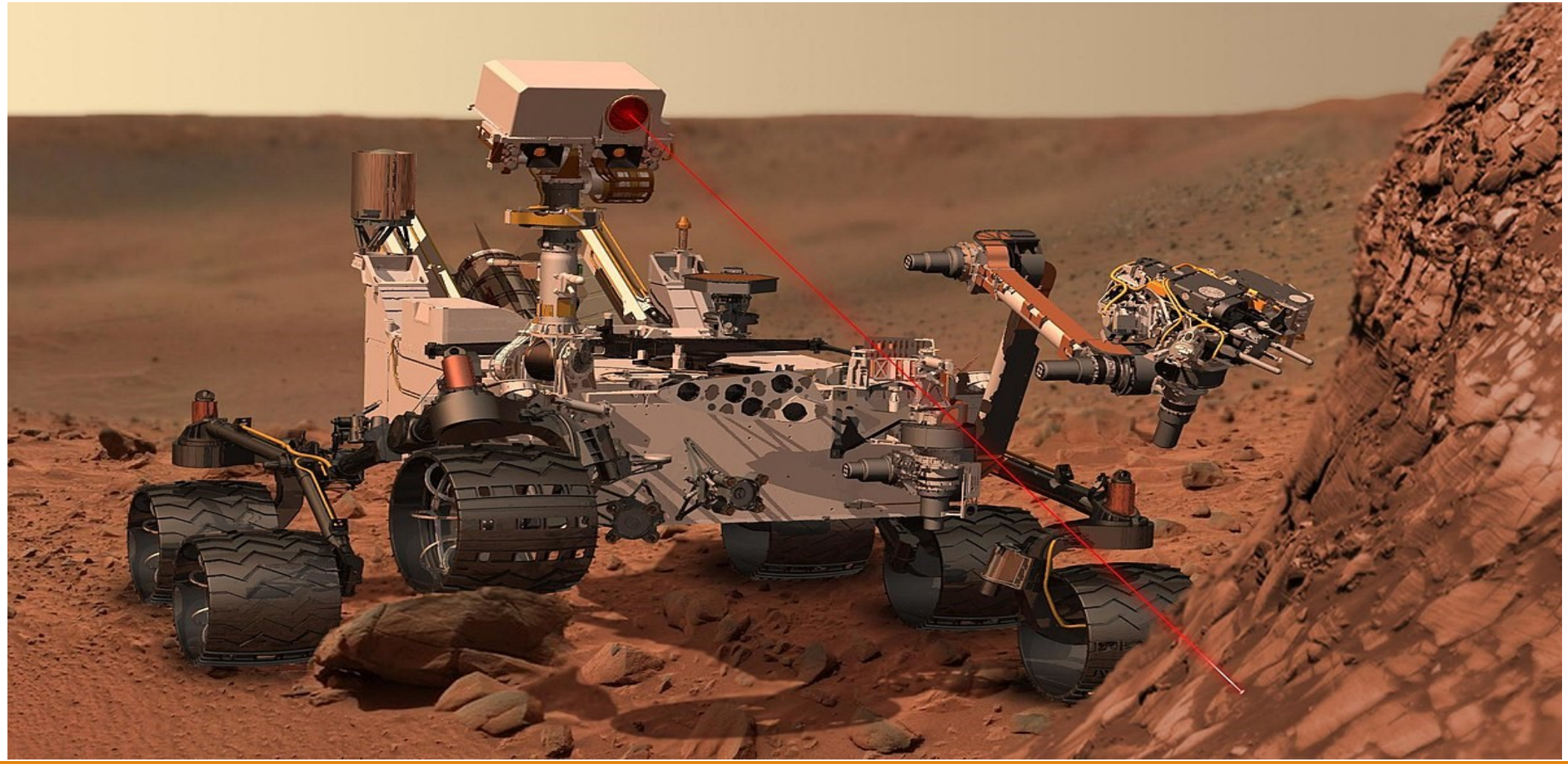

SCUD


IDENTITY PROTECTION
Name:
Password:
IDENTITY PROTECTION
Name:
Password:
PLANET OBSERVER


WICKETS
ON-FIELD CALL
IMPACT
OUTSIDE
PITCHING
OUTSIDE OFF
ORIGINAL DECISION
OUT
IRE REVIEW

Smart car Domain

Rovers, robots, bots



Medical Imaging

OpenCV

Recognition problems ?

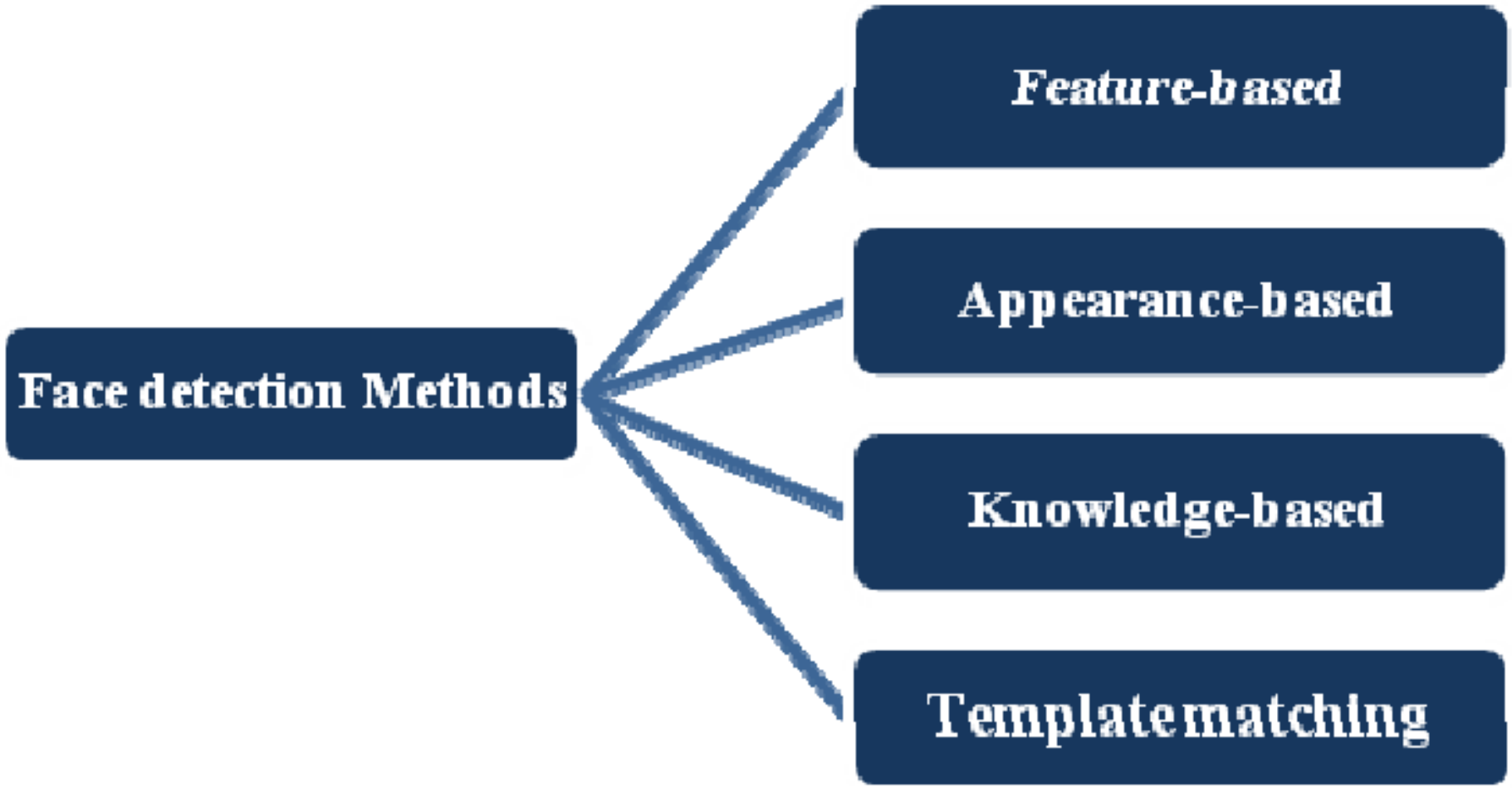
What is it?
- Object and scene recognition

Who is it?
- Identity recognition

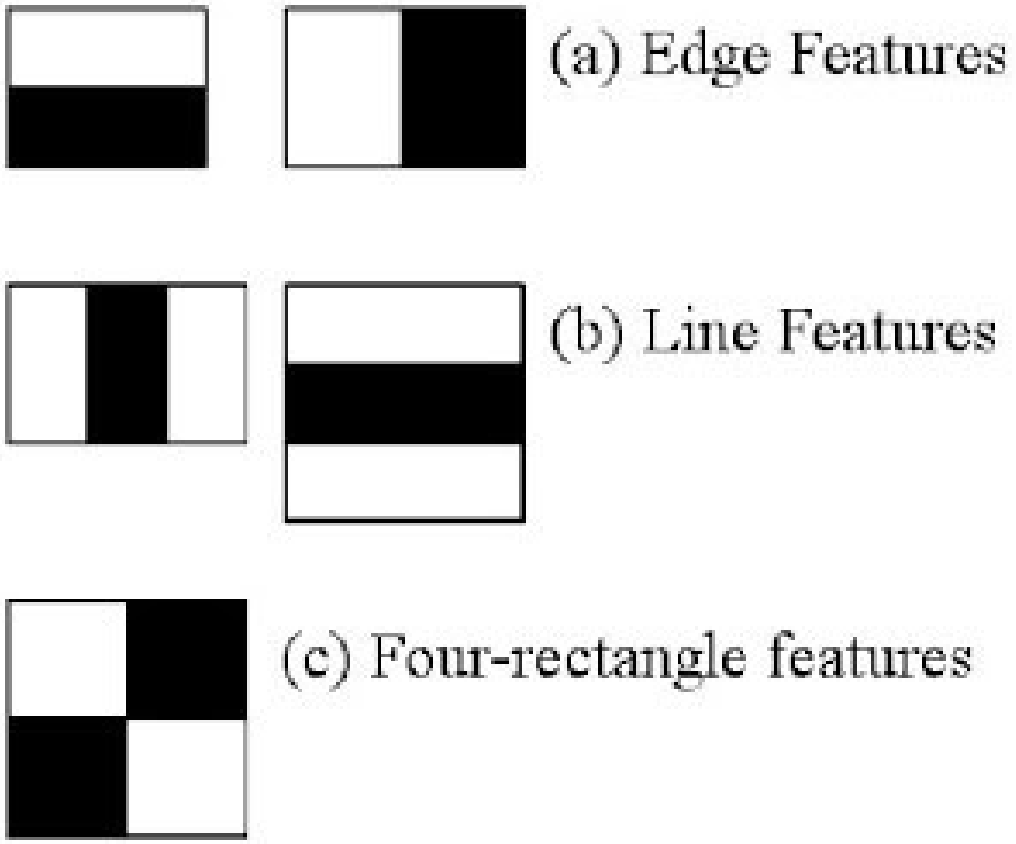
Where is it?
- Object detection

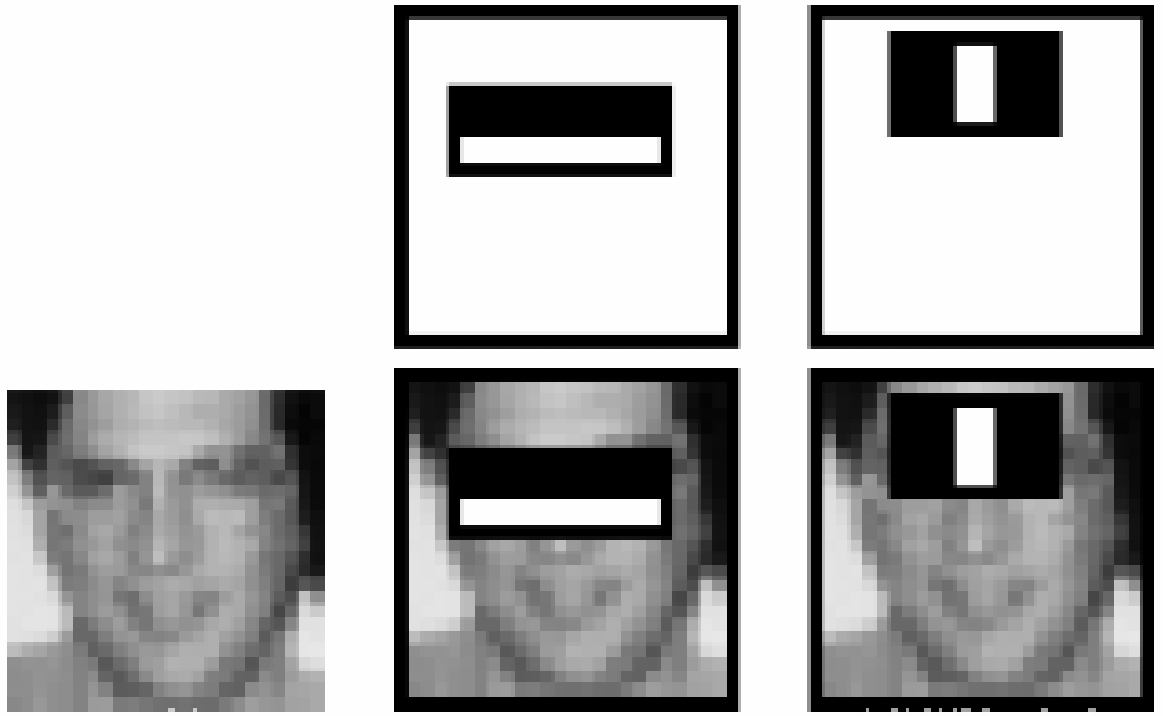
What are they doing?
- Activities

All of these are **classification** problems
- Choose one class from a list of possible candidates


Face detection Methods
Feature-based
Appearance-based
Knowledge-based
Template matching

Haar features

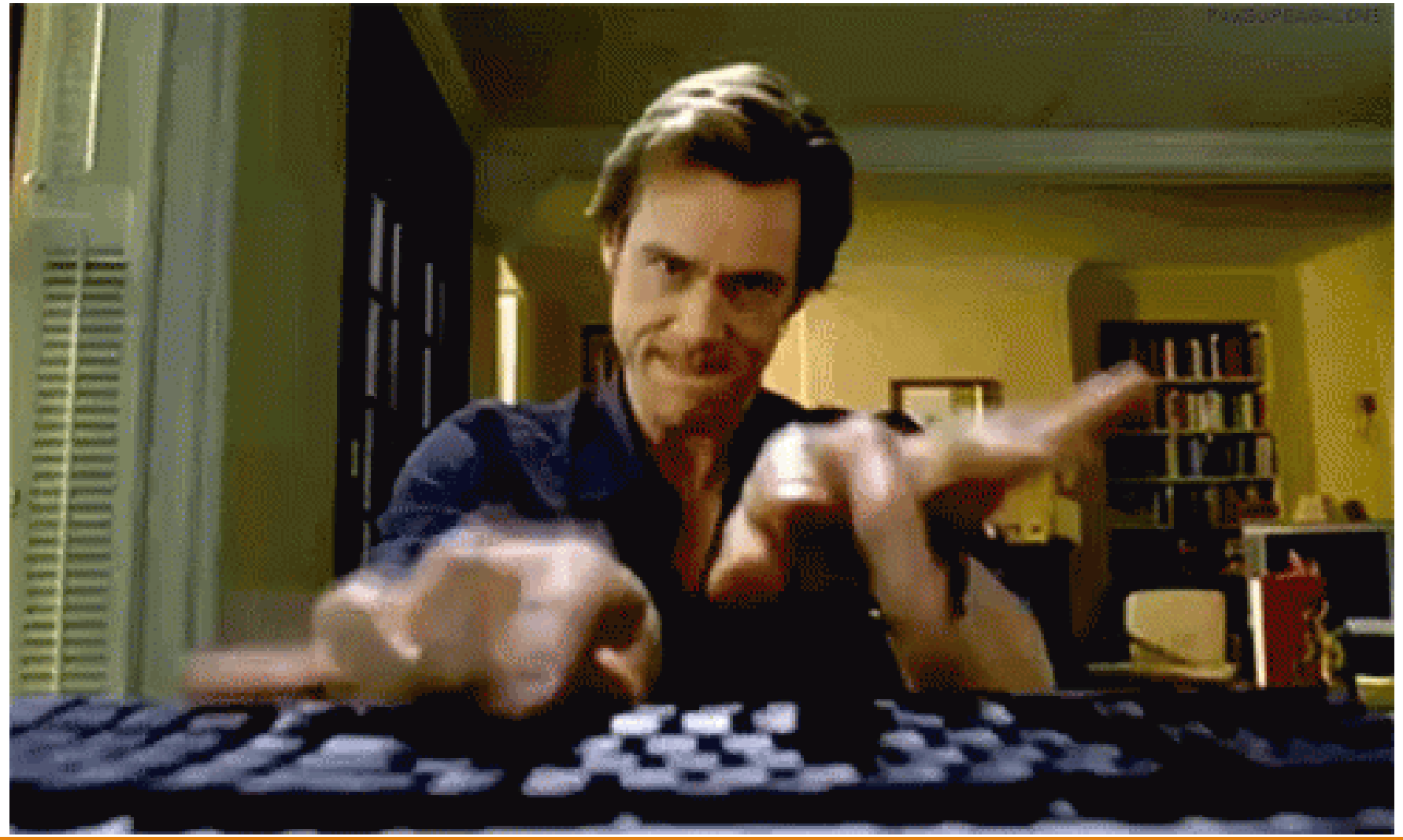




Viola – Jones Algorithm

1. Haar
2. Integral features
3. Adaboost
4. Cascading

Let’s get coding



What more?

1. Face Recognition.
2. Emotion Recognition.
3. Behavior Detection.
4. Object Classification.
5. Object Detection.
6. LPR and Speed Detection and Estimation.
7. Medical analysis
8. QA

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