



**WALC 2023**  
**Applied AI**

# Computer Vision & Hands-On

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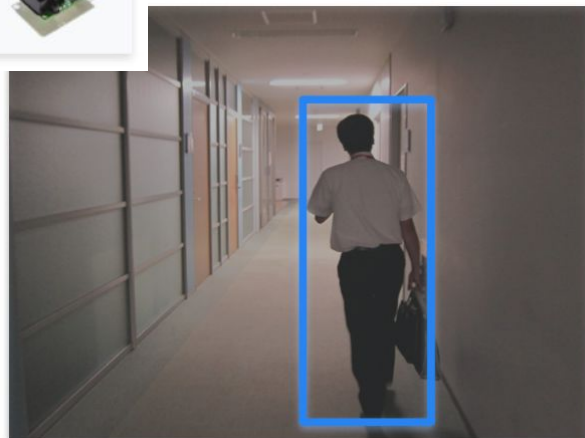
UNIFEI - Federal University of Itajuba, Brazil

TinyML4D Academic Network Co-Chair



**TINYML4D**

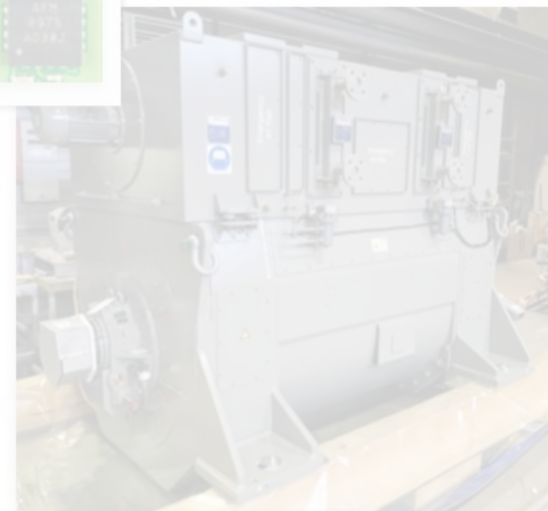
# Vision



# Sound



# Vibration



# Computer Vision Main Types

## Image Classification (Multi-Class Classification)

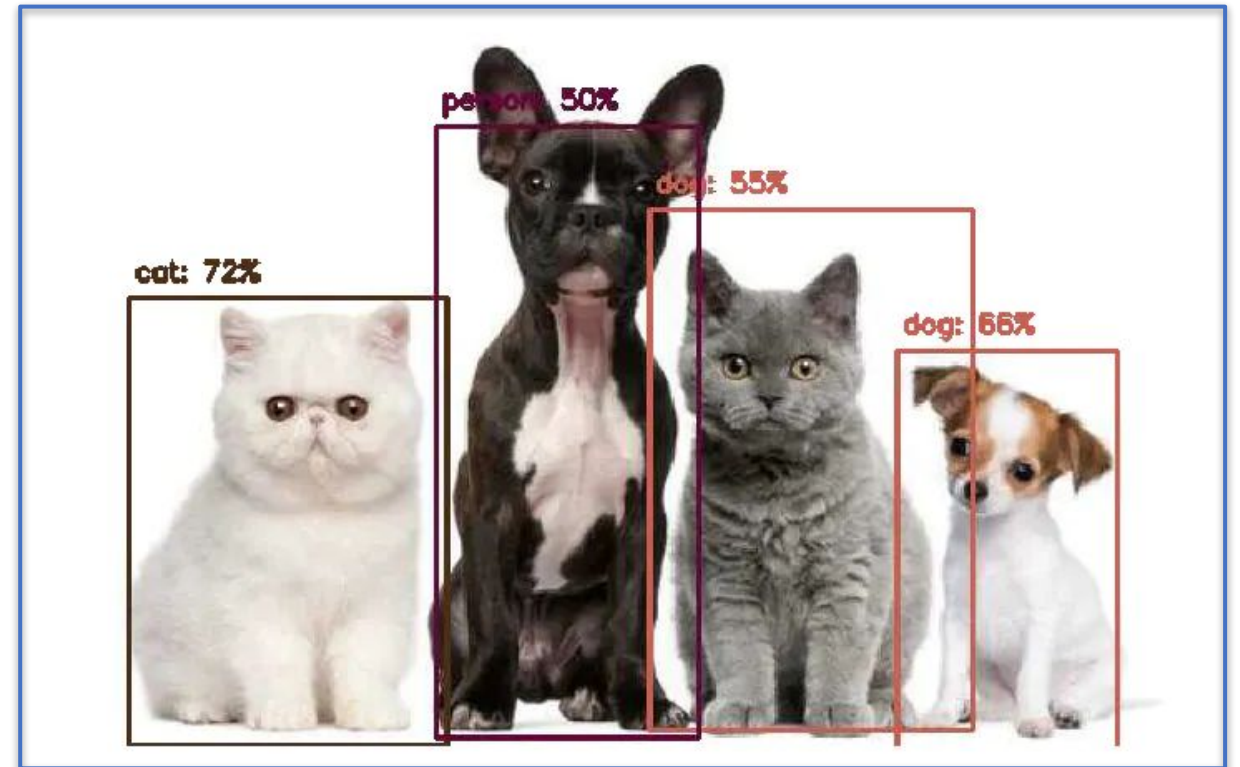


Cat: 70%



Dog: 80%

## Object Detection Multi-Label Classification + Object Localization



# Image Classification Application: Design, Train, Test and Deploy



# Computer Vision Main Types

## Image Classification (Multi-Class Classification)

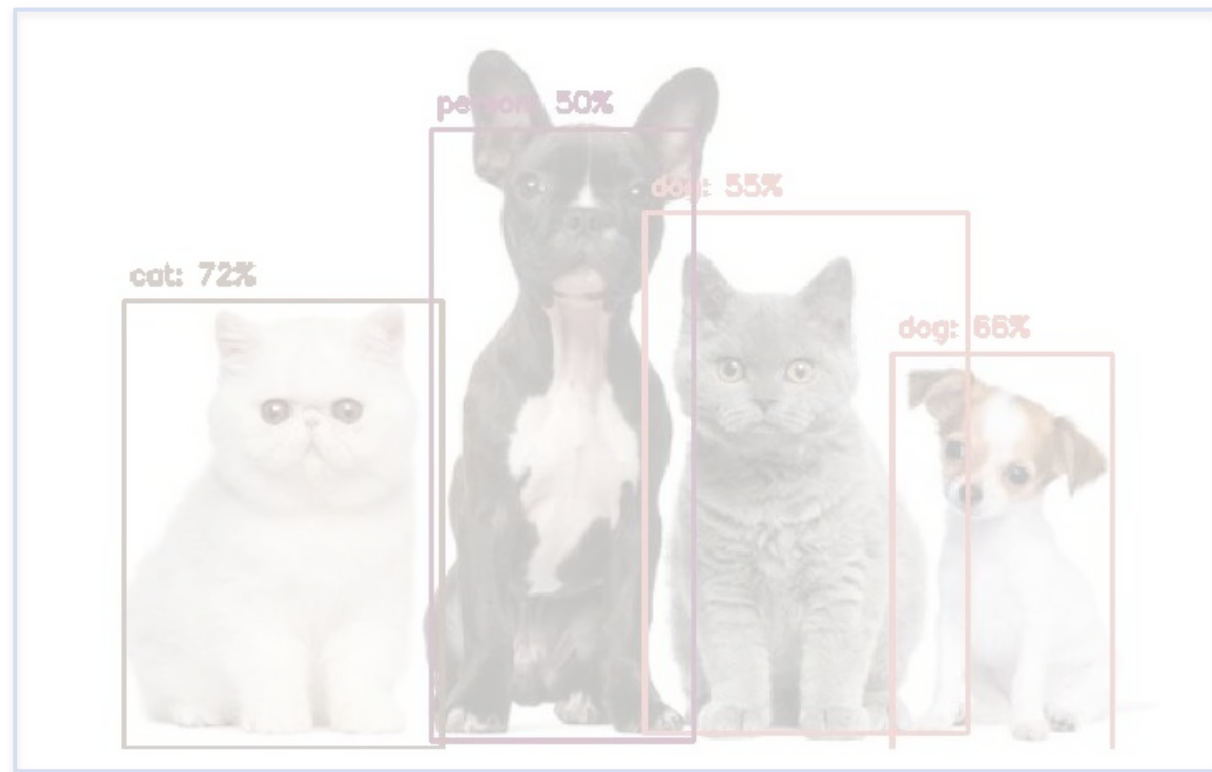


Cat: 70%



Dog: 80%

## Object Detection Multi-Label Classification + Object Localization



# Image Classification Project 1

Decide a Goal

- Possible Images:
  - medicine
  - background



<https://studio.edgeimpulse.com/public/114253/latest>



# Image Classification Project 2

Decide a Goal

- Possible Images:
  - mug
  - background

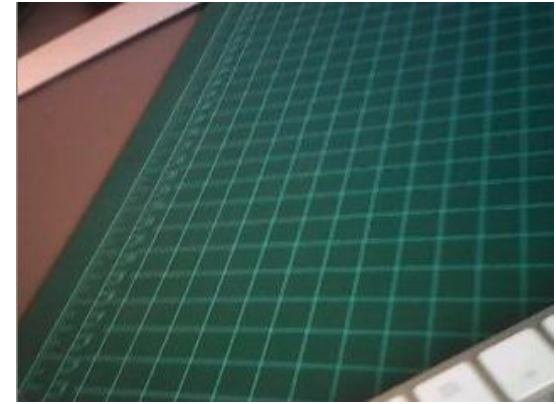


<https://studio.edgeimpulse.com/public/139479/latest>

# Image Classification Project 3

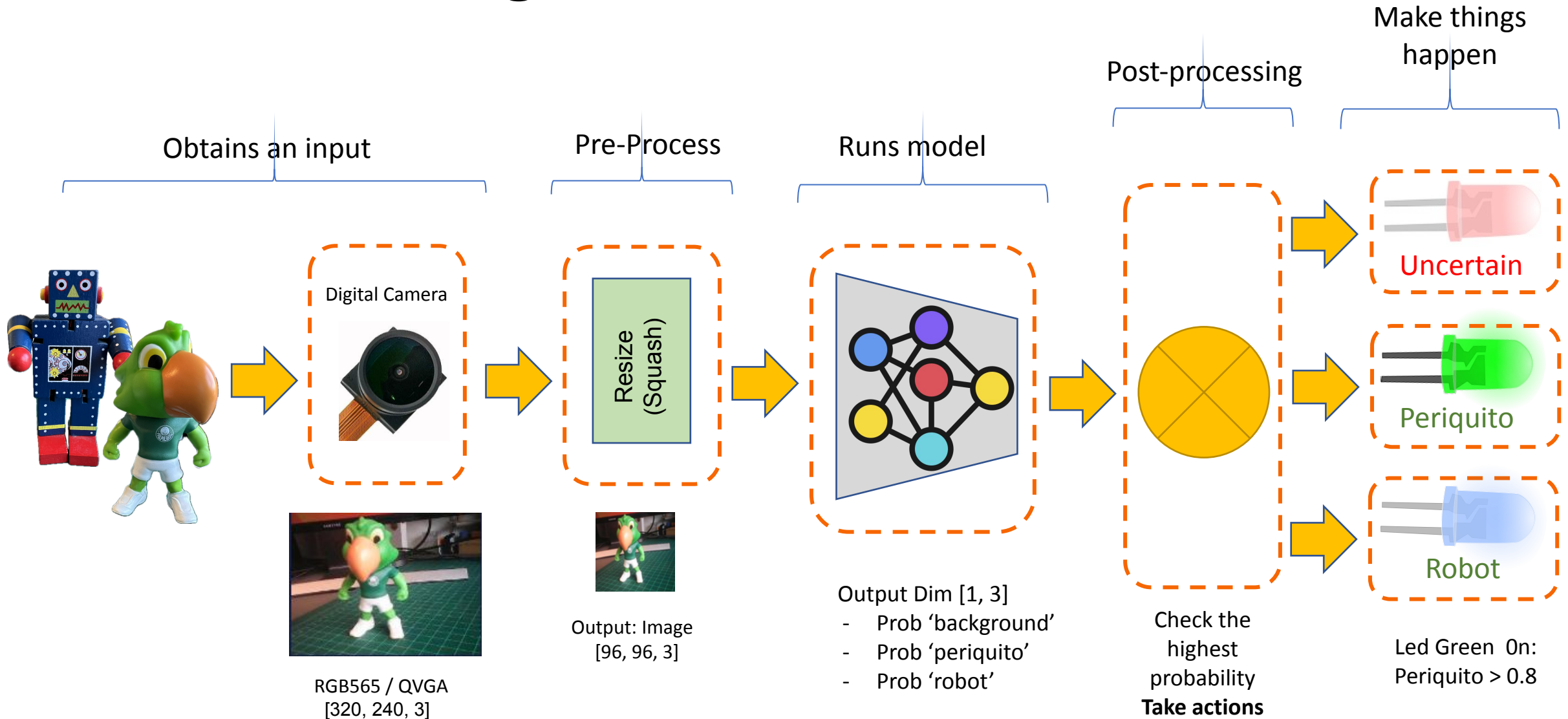
Decide a Goal

- Classes:
  - background
  - periquito
  - robot





# Post-Processing with LEDs:



# Object Detection Application: Design, Train, Test and Deploy



# Computer Vision Main Types

## Image Classification (Multi-Class Classification)

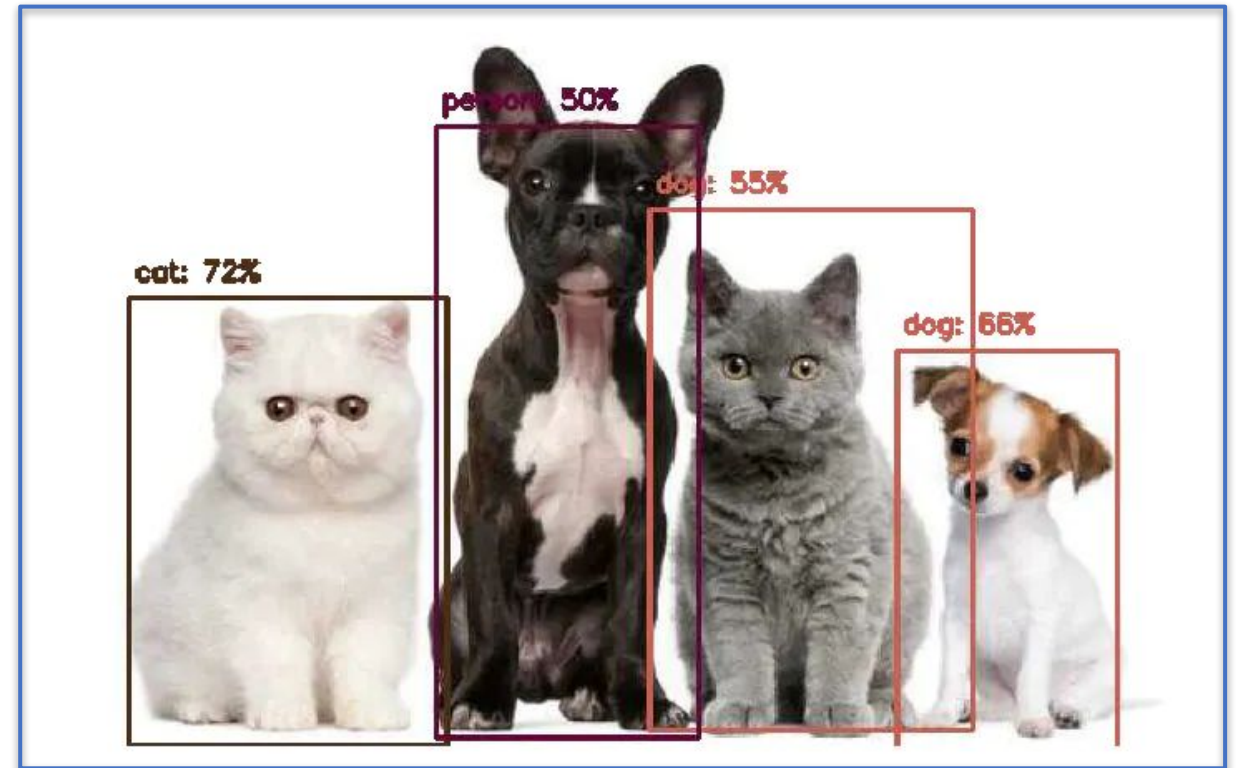


Cat: 70%



Dog: 80%

## Object Detection Multi-Label Classification + Object Localization





```
Serial Terminal | [Printer Icon] [Save Icon]

***** box *****
x 120    y 60
x 170    y 50
x 110    y 120
***** wheel *****
x 70     y 50
x 50     y 110
x 190    y 110
x 50     y 190
8.16685 fps
```

# Thanks

