GitHub

GARBAGE CONTROL PROJECT

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COLABORATORY

IMPLEMENTAZIONE

SEGMENTATION

IDEA

CONSUMISMO

EMISSIONI

PROBLEMA

COLABORATORY

IMPLEMENTAZIONE

SEGMENTATION

IDEA

Consumismo di massa

Termine delle risorse

CONSUMISMO

PROBLEMA

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IDEA

EMISSIONI

PROBLEMA

Emissioni di Gas e Particolato

Problemi di salute

Danni all’intero ecosistema sia animale che vegetale

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SEGMENTATION

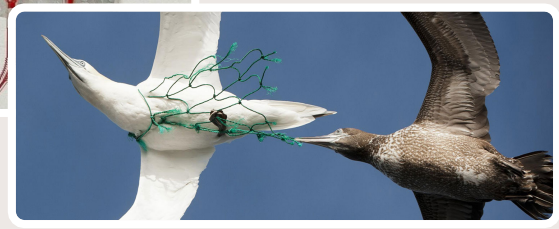
IDEA

PROBLEMA

BOTTIGLIA
500 ANNI

FLACONE DETERSIVO
400 ANNI

SACCHETTO
20 ANNI



How Much Trash Is on Mount Everest?
Stop all'inquinamento da plastica
The 4ocean
Plastic Blood

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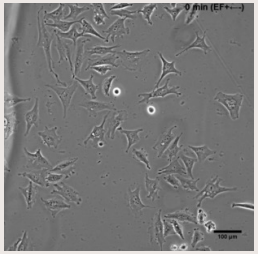
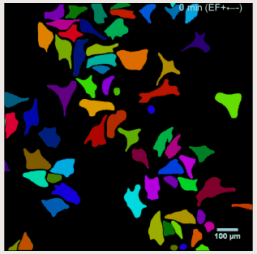
IMPLEMENTAZIONE

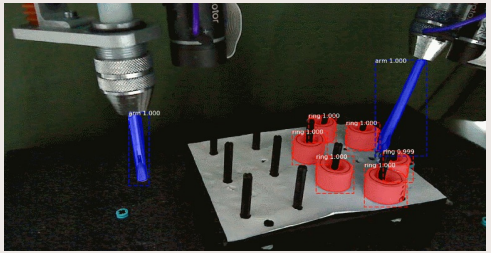
SEGMENTATION

- Tracking





- Acting on



Great Pacific Garbage Patch:
Isola di plastica del pacifico con estensione pari a 3 volte la Francia

IDEA

PROBLEMA

L'isola di plastica

COLABORATORY

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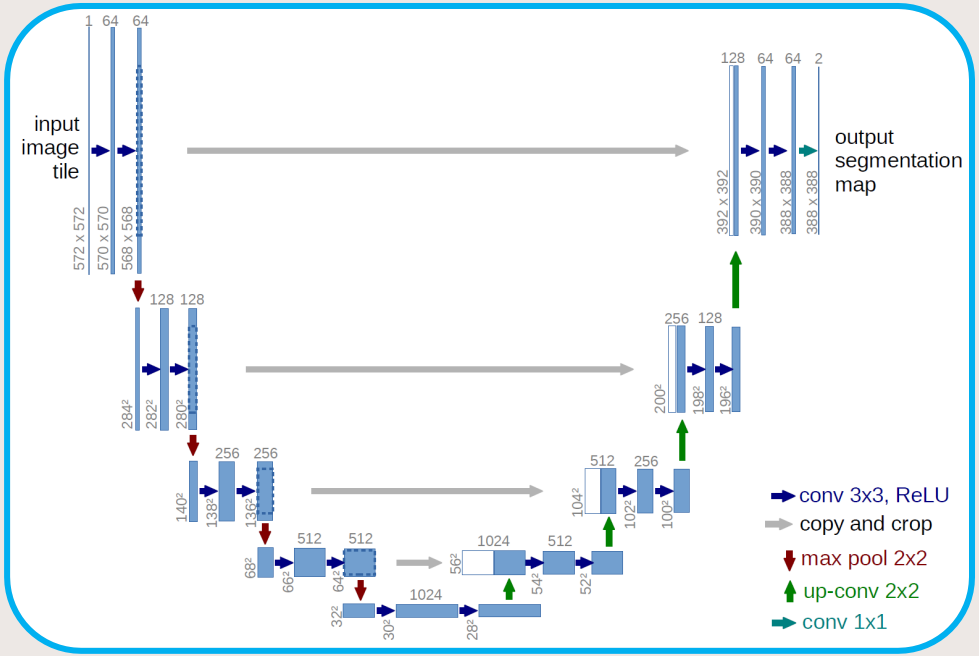
PROBLEMA

Segmentation Models

Pre-trained backbone per riconoscimento di feature di basso livello di oggetti in generale



SEGMENTAZIONE

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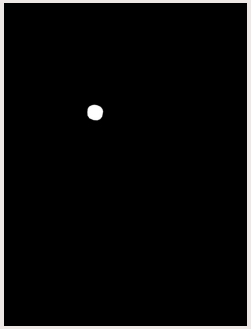
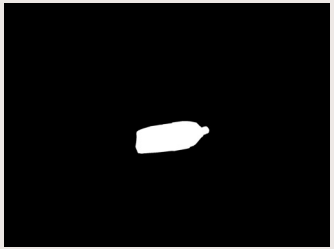
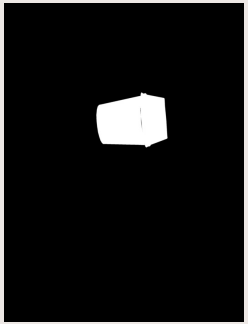
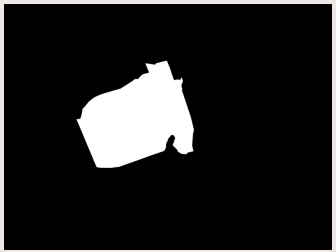


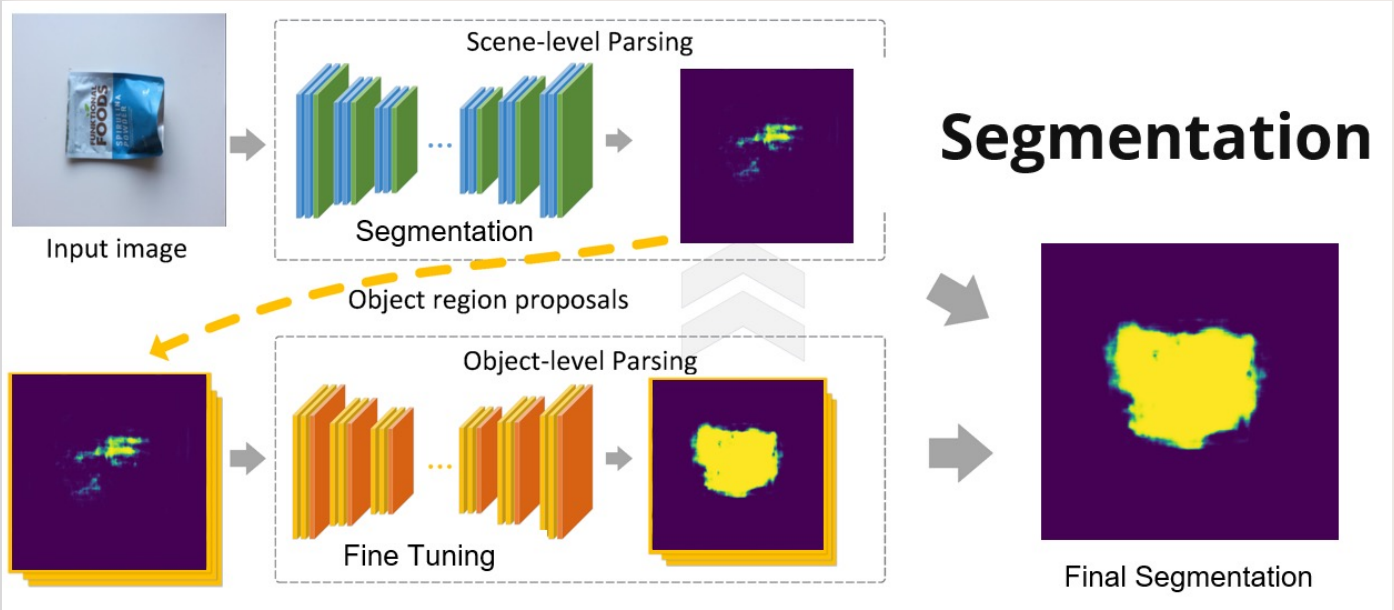






Creazione della maschera dall'immagine originale tramite RLE

Segmentation Models



PREPARAZIONE DEL DATASET

Stretch
480 x 480

Stretch immagini da valori variabili a 1500x480x480

espansione dimensione per le immagini segmentate:
(n, 480, 480) a (n, 480, 480, 1)

Divisione del Dataset in 5 batch da 20 immagini

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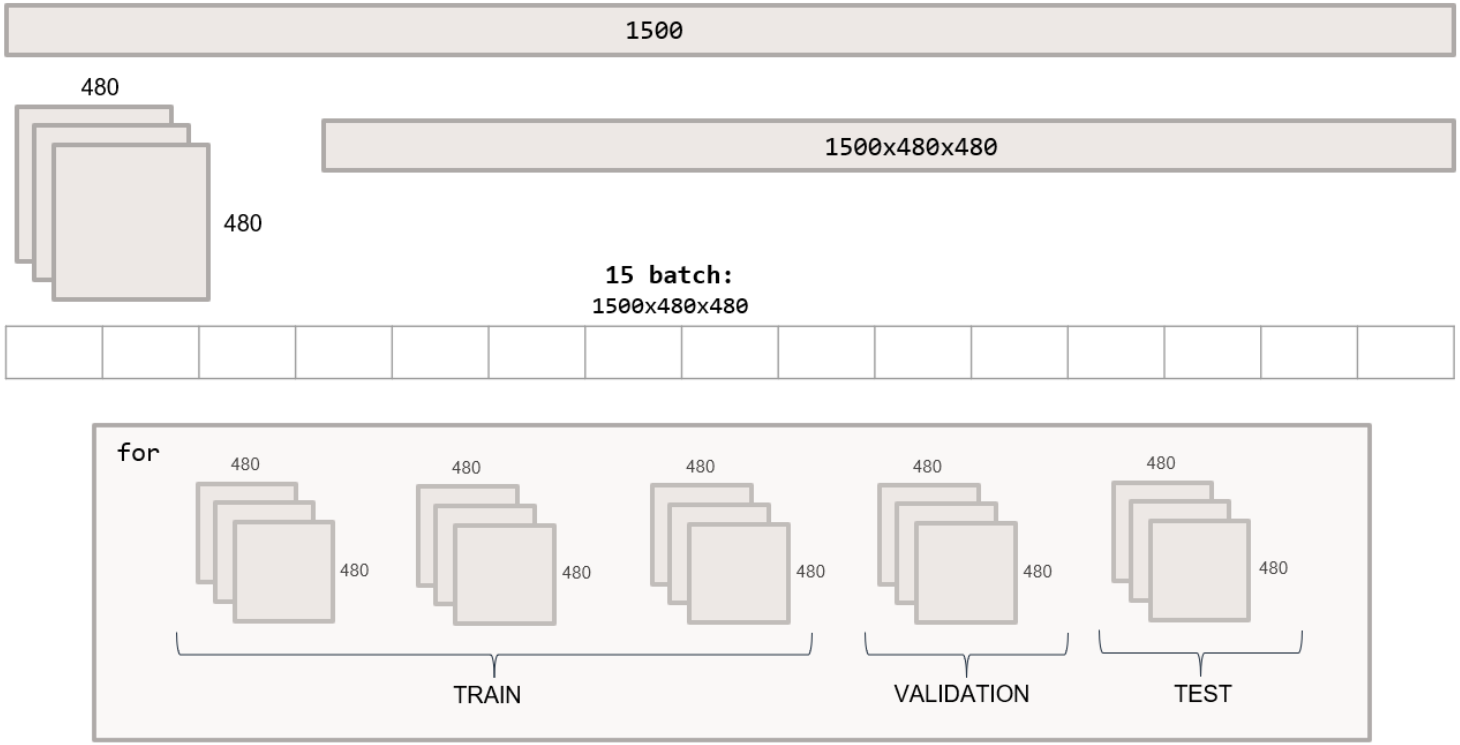
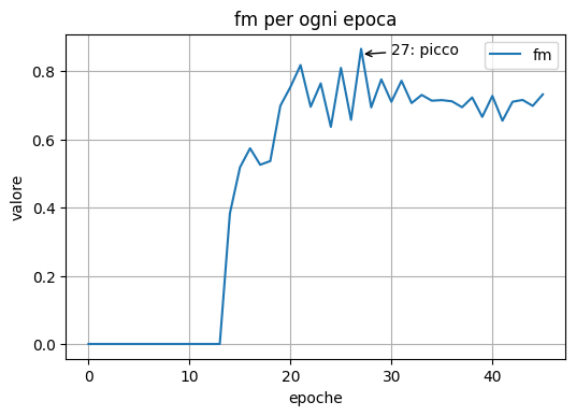
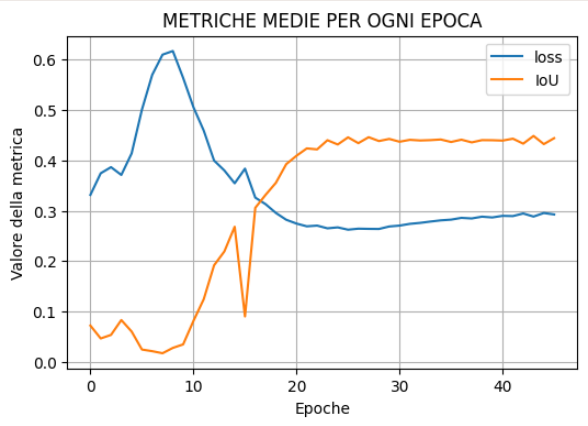
Split Dataset

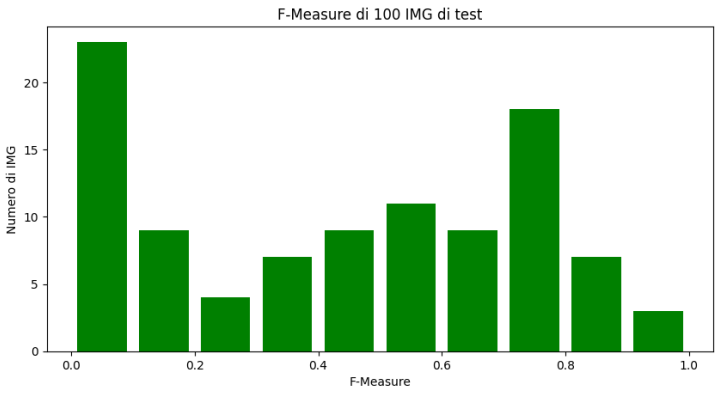


TRAINING RESULTS

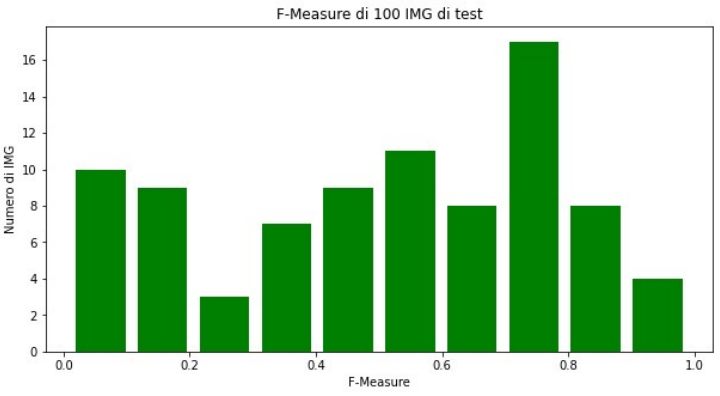




Media



Media Troncata



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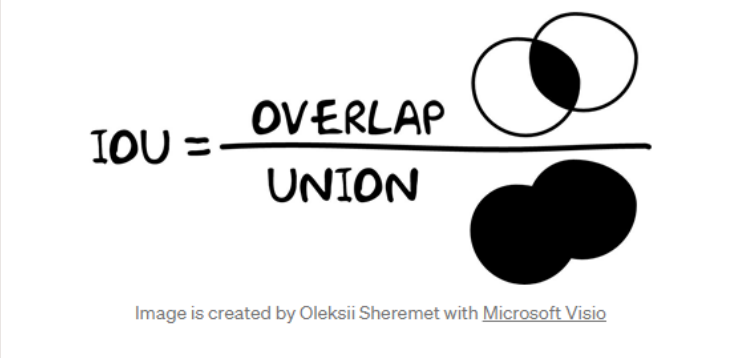
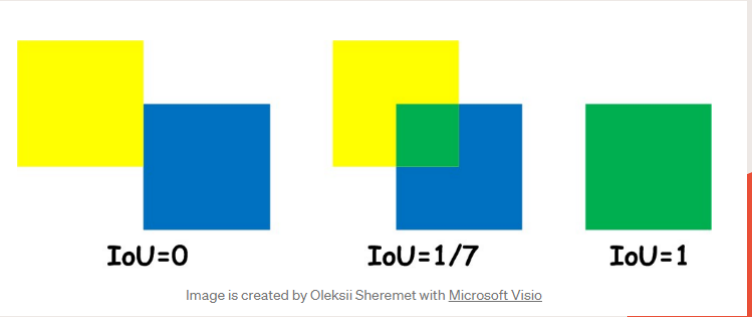
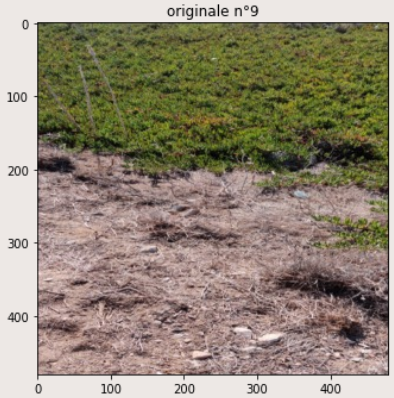
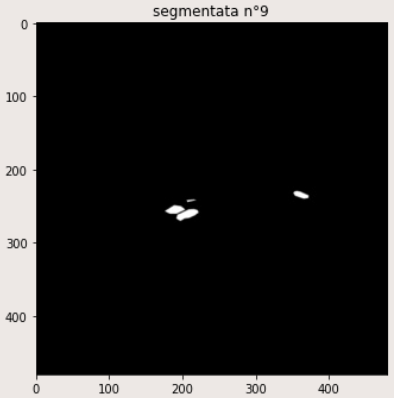
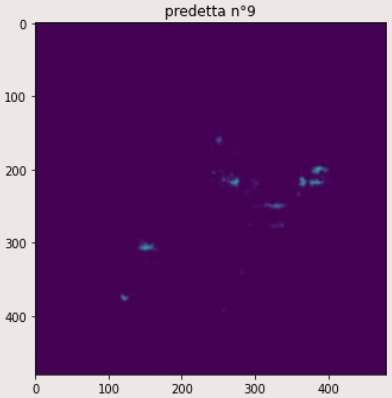


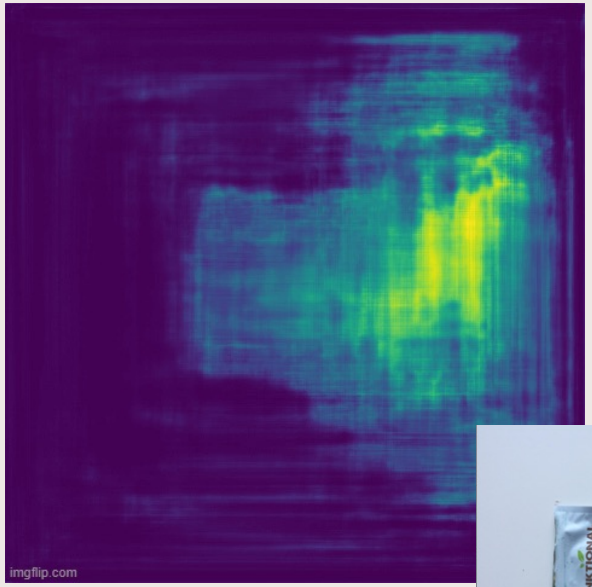


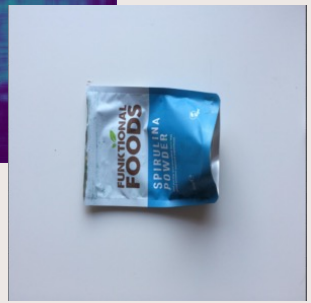


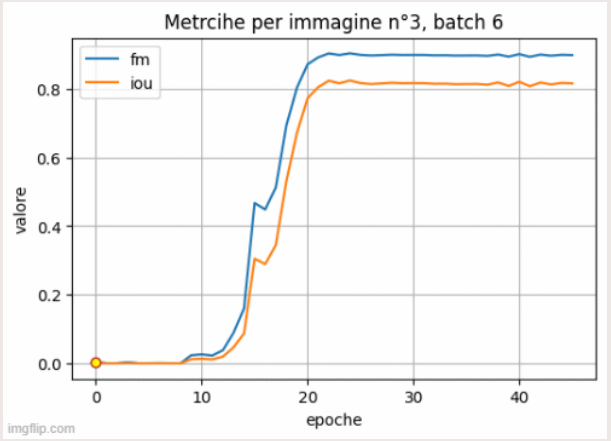




TRAINING







IoU	F-Measure
0.82	0.899

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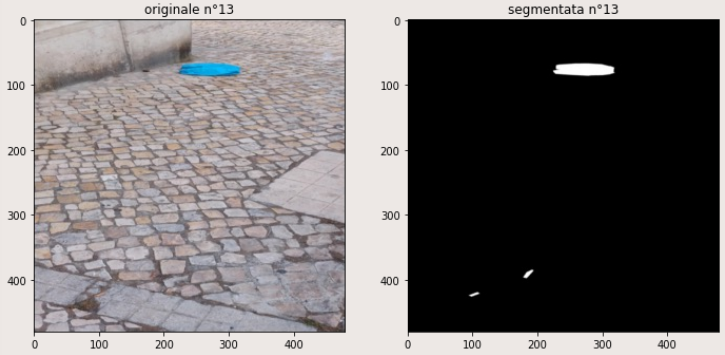
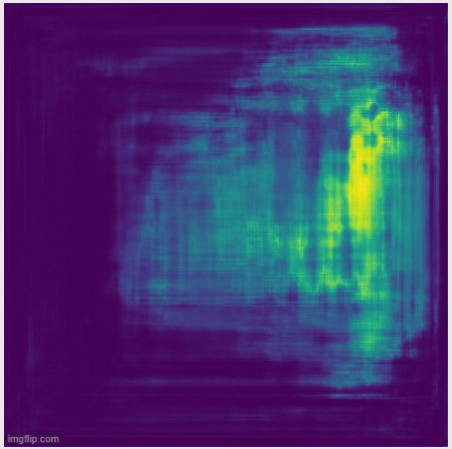
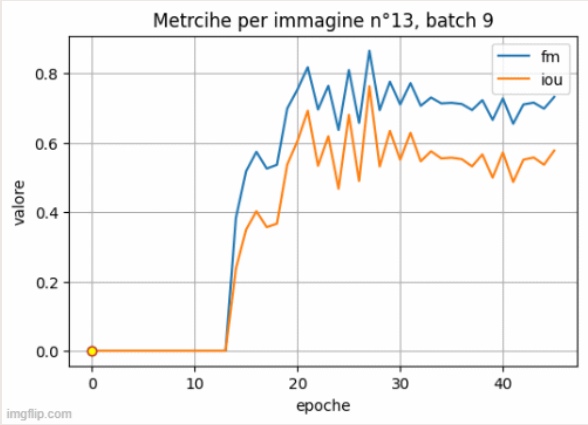




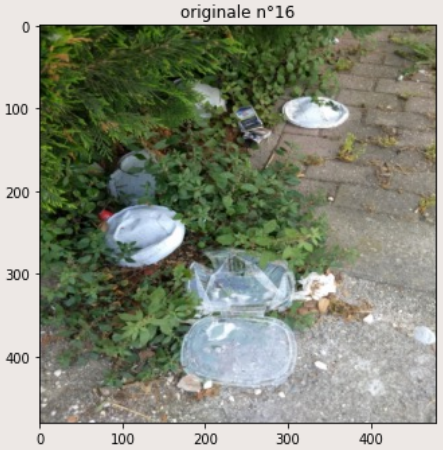
TRAINING

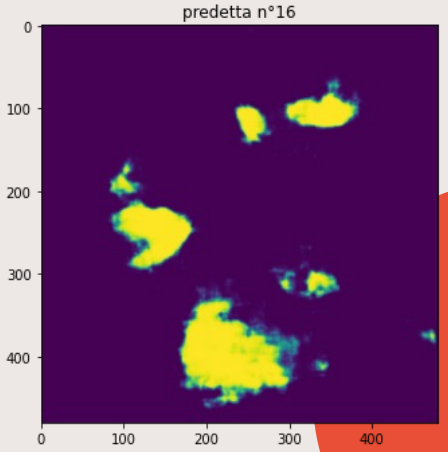
IoU	F-Measure
0.58	0.73

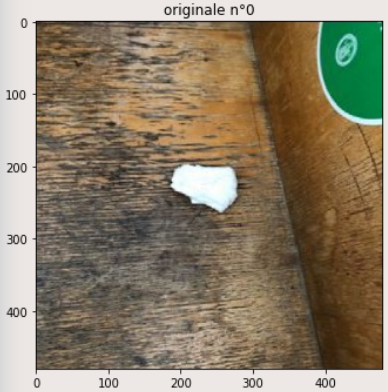


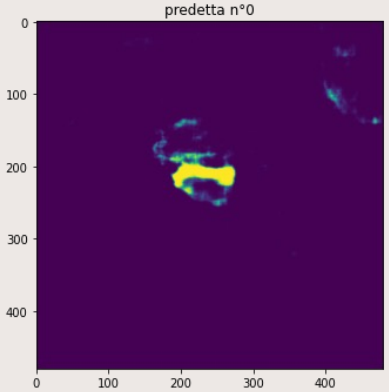
TEST REALI

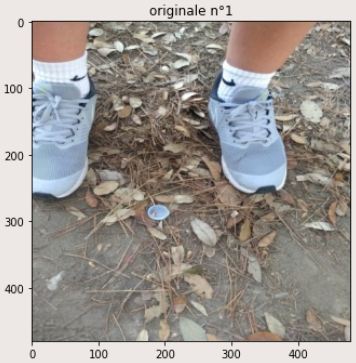
Foto scattate dai nostri cellulari.

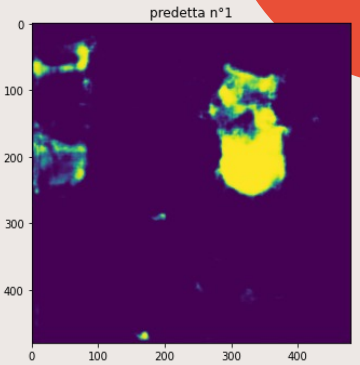












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PROBLEMA

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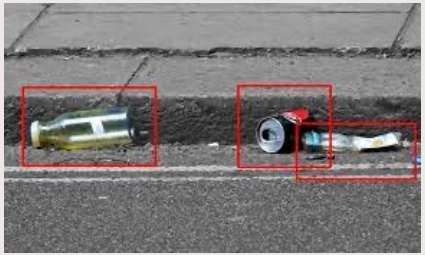
INDIVIDUAZIONE

1

Capire cosa è un rifiuto da un'immagine



SEGMENTAZIONE

2

Individuare i rifiuti tramite segmentazione

INDIVIDUAZIONE

3

Implementare il sistema per la raccolta

IDEA

SVILUPPI FUTURI

PROBLEMA

FONTI

PROBLEMA:

- Bill Gates (2021), «**HOW TO AVOID A CLIMATE DISASTER**»
- Mario Tozzi (2021), «**Uno scomodo equilibrio. Uomini, virus e pandemie»**
- NETFLIX, «**Our Planet**»
- AMAZON PRIME VIDEO, «**What's in your playe**»
- WWF, https://sostieni.wwf.it
- FRIDAYS FOR FUTURE, https://fridaysforfutureitalia.it/
- 4OCEAN, https://www.4ocean.com/

DATASET:

- COCO - Common Objects in Context (cocodataset.org)
- GitHub - nightrome/cocostuffapi: COCO Stuff API
- TACO/demo.ipynb at v0.1 · pedropro/TACO · GitHub
- GitHub - foolmarks/images_to_npy: Converting images to numpy files
- COCO Dataset Format - Complete Walkthrough - YouTube

SEGMENTAZIONE:

- Luisa Verdoliva, «**La Segmentazione**»
- https://github.com/dbolya/yolact/issues/536
- https://github.com/cocodataset/cocoapi/blob/master/PythonAPI/pycocotools/mask.py
- https://github.com/cocodataset/cocoapi/blob/master/PythonAPI/pycocotools/_mask.pyx
- Masked arrays — NumPy v1.22 Manual

TRAINING:

- Model training APIs (keras.io)
- https://medium.com/red-buffer/semantic-segmentation-u-net-1e5c0f4516a5
- https://www.kaggle.com/code/iezepov/fast-iou-scoring-metric-in-pytorch-and-numpy/script
- fnmatch — Unix filename pattern matching — Python 3.10.5 documentation + python - Get a filtered list of files in a directory - Stack Overflow
- Luisa Verdoliva & Davide Cozzolino, «**Ex8**» , «**Ex9**», «**Ex10**»
- Luisa Verdoliva, «**Unet** »

GRAFICI:

- https://riptutorial.com/Download/matplotlib-it.pdf
- https://it.softpython.org/visualization/visualization1-sol.html
- Segmentation Models Python API — Segmentation Models 0.1.2 documentation (segmentation-models.readthedocs.io)