**Project 3 – Computer Vision**

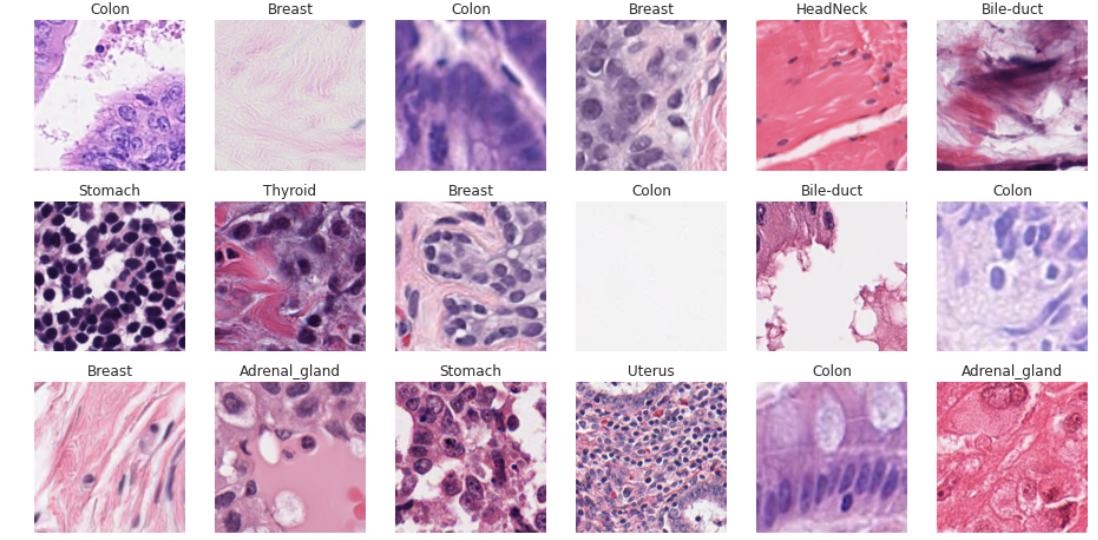
1. Description of the data set

We selected the dataset : <https://www.kaggle.com/datasets/andrewmvd/cancer-inst-segmentation-and-classification>.

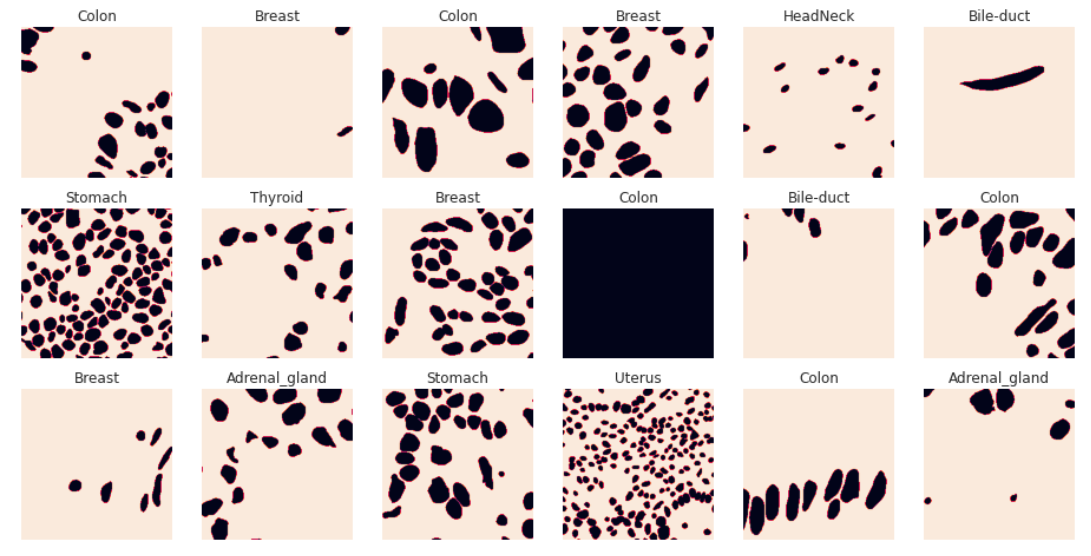
This dataset is known as PanNuke and contains semi automatically generated nuclei instance segmentation and classification images with exhaustive nuclei labels across 19 different tissue types. (Breast, Colon, Bile-duct, Esophagus, Uterus, Lung, Cervix, Head&Neck, Skin, Adrenal Gland, Kidney, Stomach, Prostate, Testis, Liver, Thyroid, Pancreas, Ovary, Bladder).

The datset contains 2656 images of tissue, the label of the tissue type it belongs to and the masks (array of 6 channel instance-wise masks, 0:Nocleoplastic cells, 1:Inflammatory, 2 : Connective/Soft tissue cells, 3: Dead Cells, 4: Epithelial, 6: Background/non nuclei part of the tissue).

This is a set of 18 images from our dataset with their corresponding labels :



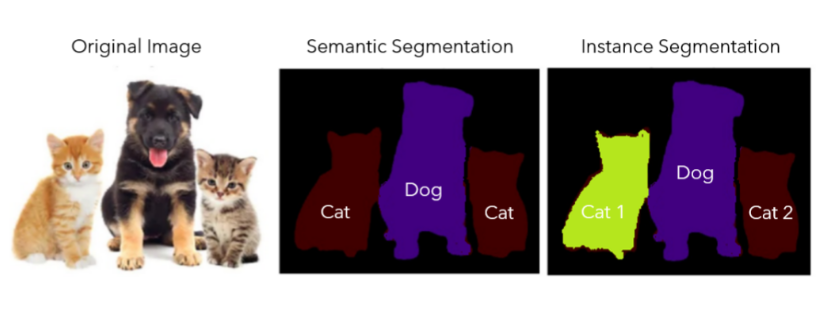
The masks give us this result for those images (colored zone are part of background, in black there is part of images that belong to a nuclei) :



1. Description of the problem

The problem that we choose is the problem of instance segmentation.

Instance segmentation is a form of image segmentation (deals with detecting instances of objects and demarcating their boundaries). So, Instance Segmentation is the technique of detecting, segmenting, and classifying every individual object in an image. The principal difference with semantic segmantation is that we don’t just want to detect the class of the object that the object belongs to but we also want to determine the number of instance of each class that we can find on our image.

Image from https://www.v7labs.com/blog/instance-segmentation-guide

1. Bibliography

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