Hackathon IA CONFORMiT

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Introduction

Brainstorming

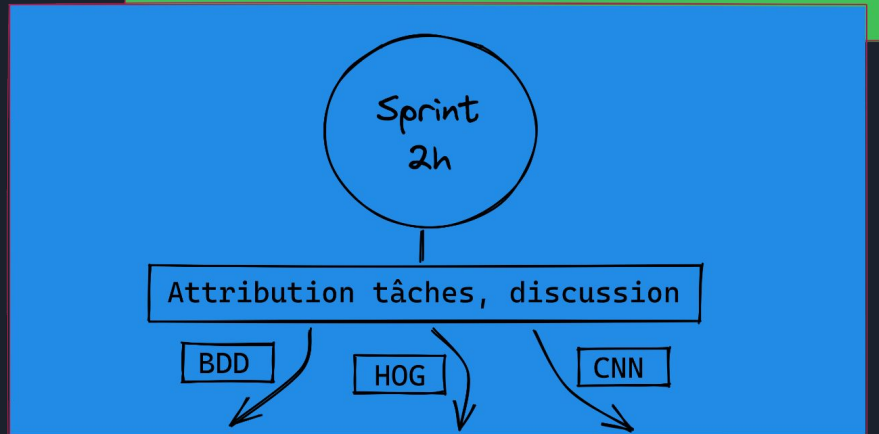
1- Nettoyer les données

2- Détection par descripteur

3- Apprentissage pour classification et détection

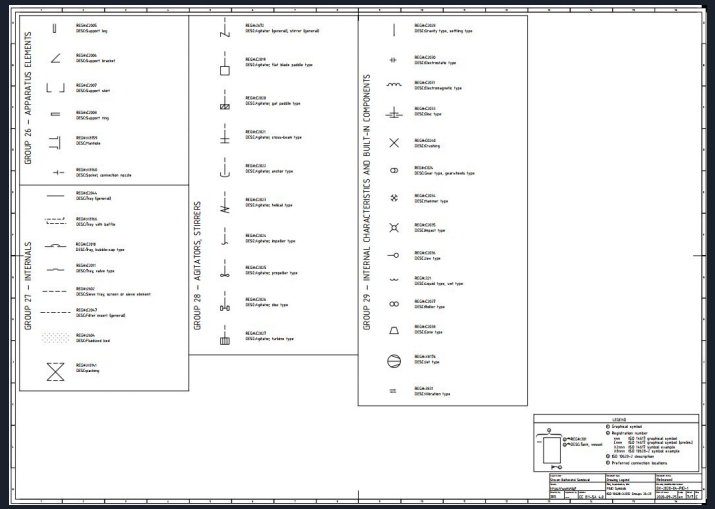
État de l'art

Regarder les projets similaires existant (Morphologie, techno. à utiliser)



Base de données

Set d’images de la datasheet



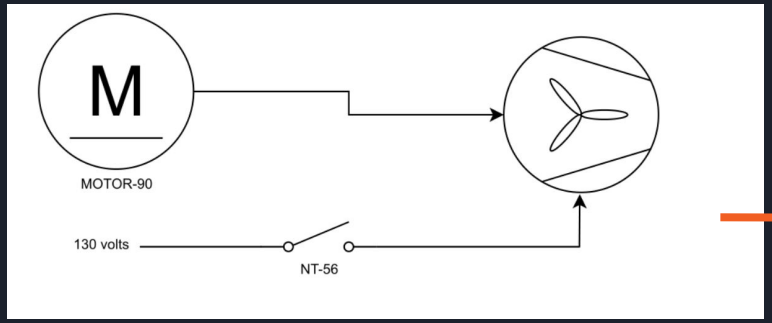
Construire des descripteurs pour la détection des symboles

Base de données

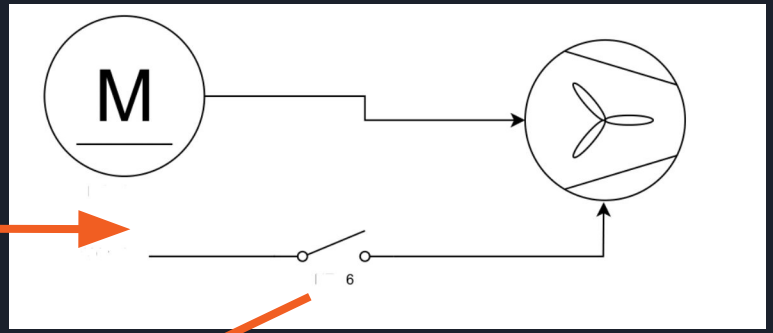
Suppression caractères et liaisons

Faciliter la détection des symboles

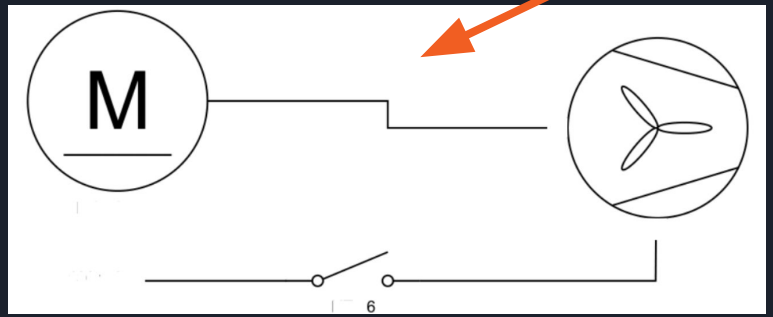
Set initial



Set après suppression caractères (librairie pytesseract pour reconnaissance caractères)



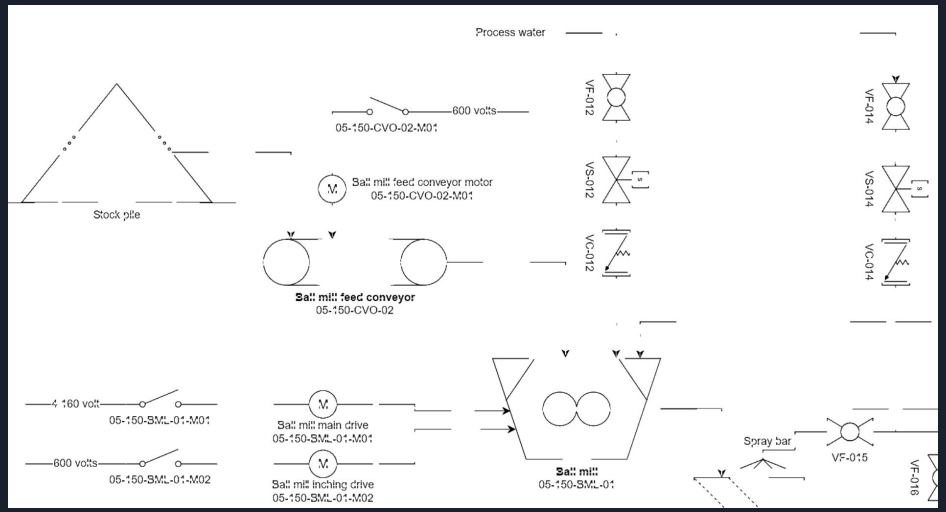
Set après suppression liaisons (méthode OpenCV TemplateMatching)



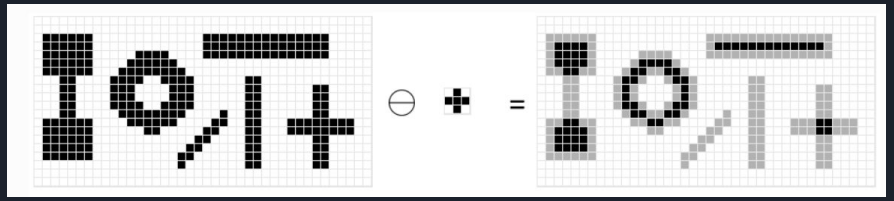
Base de données

Suppression caractères et liaisons

Opérateur Morphologique appliqué aux images



Erosion

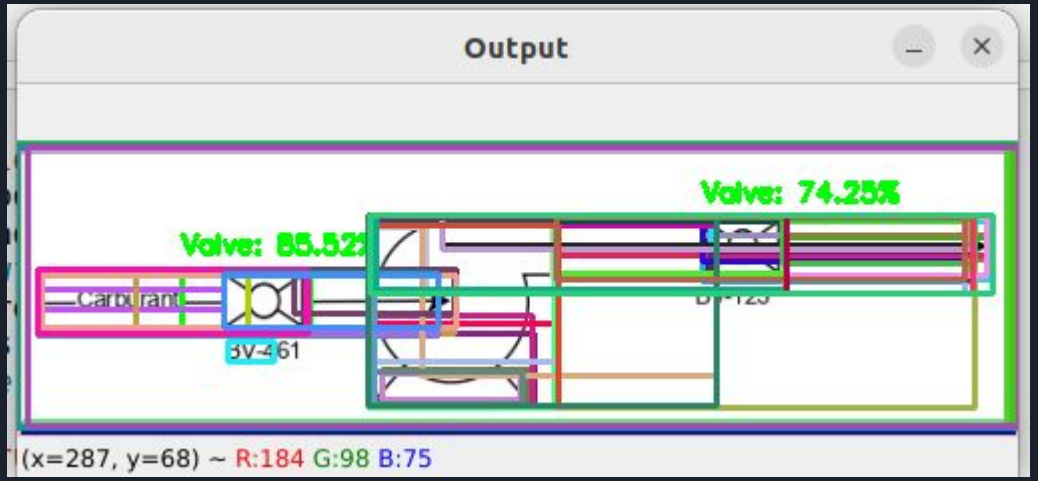


- Détruit les composants
- Epure l'image par la suppression des lignes
- Meilleur visibles lors des passages par fenêtre

CNN

Encadrement de la recherche - Méthode Felzenszwalb superpixel

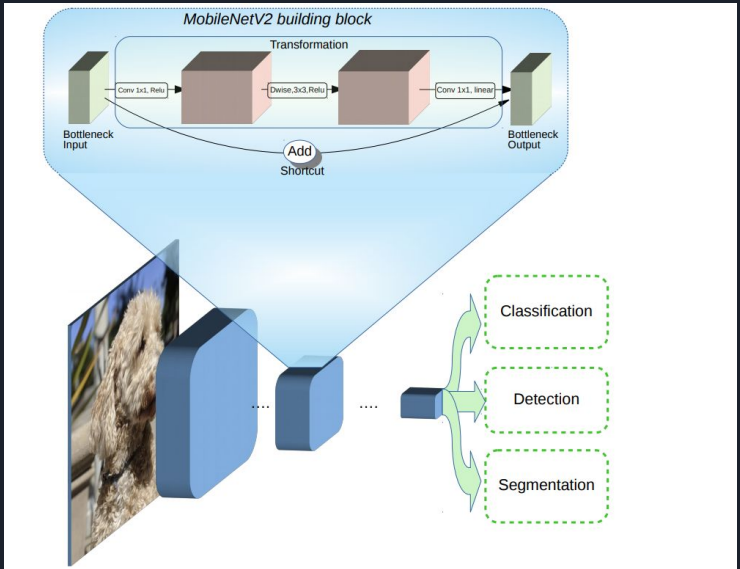
- Couleur
- Texture
- Taille
- Forme
- Meta (combinaison linéaire des 4 autres)



CNN

Réseau CNN - NMS

MobileNetV2 - Rajout couches

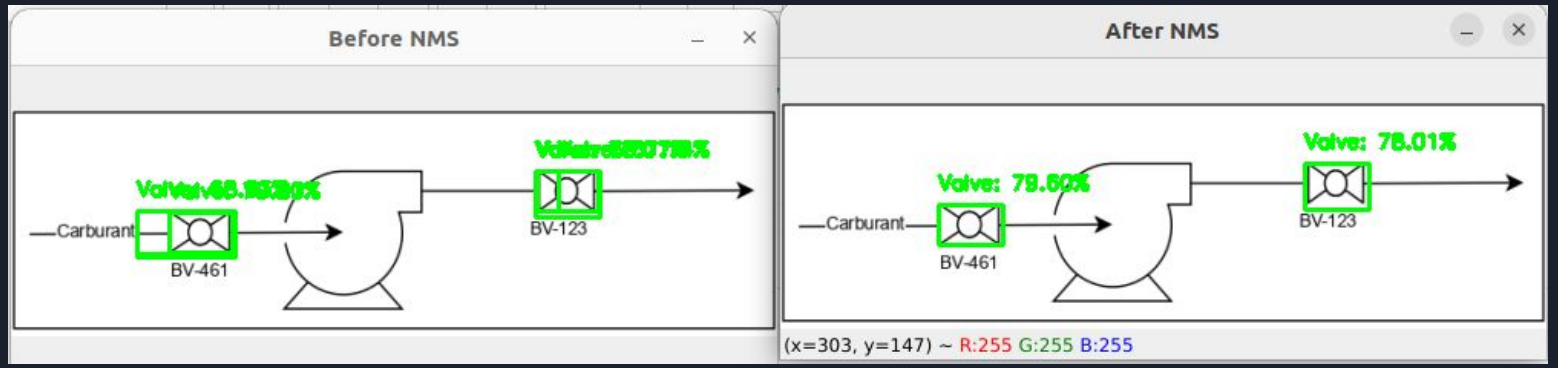



```python
# load the MobileNetV2 network, ensuring the head FC layer sets are
# left off
baseModel = MobileNetV2(weights="imagenet", include_top=False,
    input_tensor=Input(shape=(224, 224, 3)))
# construct the head of the model that will be placed on top of the
# the base model
headModel = baseModel.output
headModel = AveragePooling2D(pool_size=(7, 7))(headModel)
headModel = Flatten(name="flatten")(headModel)
headModel = Dense(128, activation="relu")(headModel)
headModel = Dropout(0.3)(headModel)
headModel = Dense(2, activation="softmax")(headModel)
# place the head FC model on top of the base model (this will become
# the actual model we will train)
model = Model(inputs=baseModel.input, outputs=headModel)
# loop over all layers in the base model and freeze them so they will
# *not* be updated during the first training process
for layer in baseModel.layers:
    layer.trainable = False
```

CNN

Réseau CNN - NMS

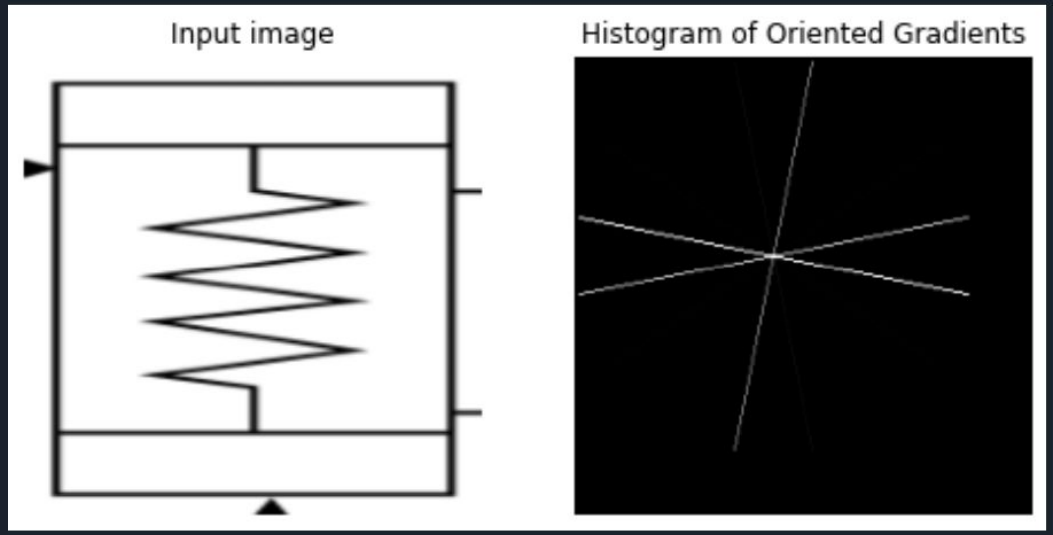
NMS - Non-Maxima Suppression

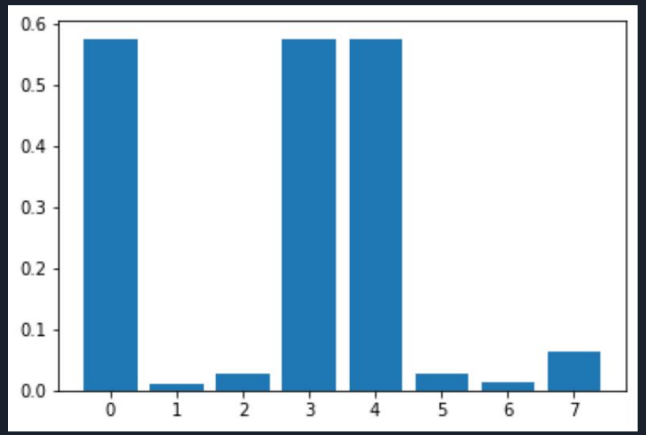


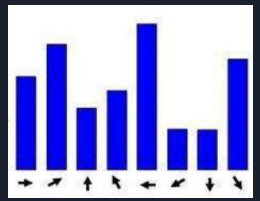
HOG

Histogramme des orientations de gradient : Descripteur

Descripteur





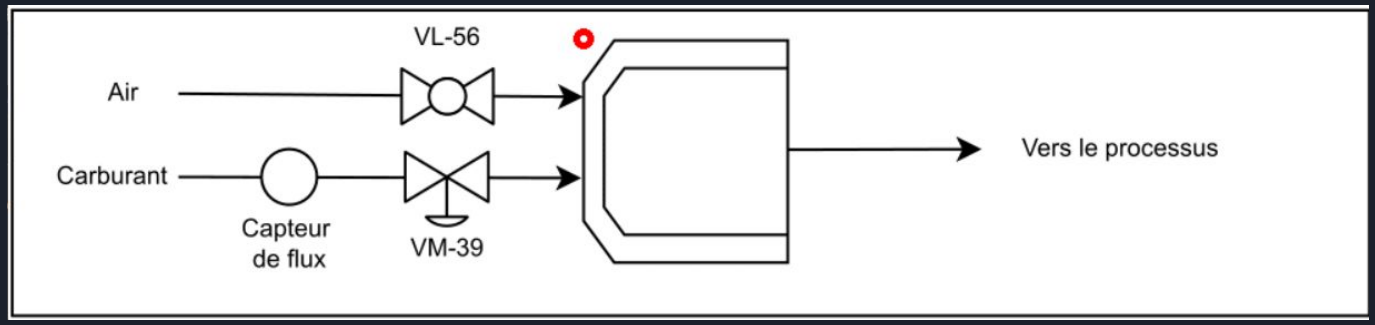


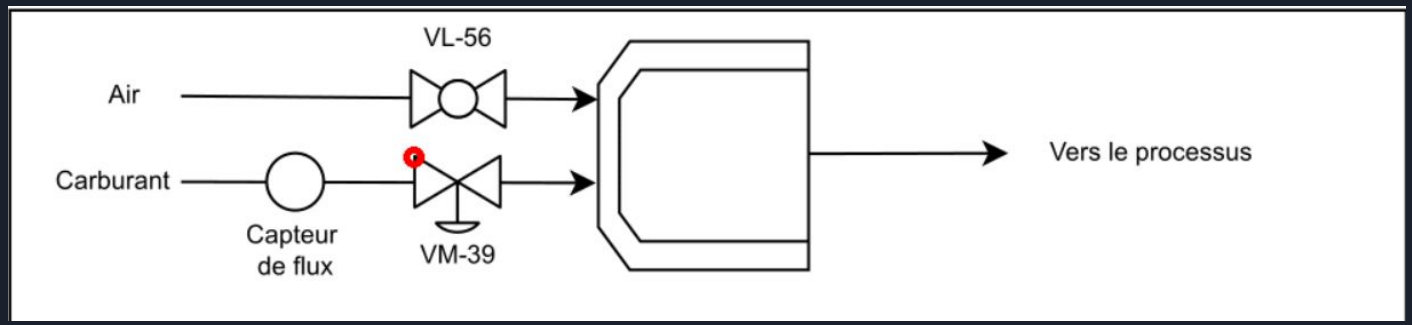
- Invariant par rotation
- Reconnaître les pattern des familles

HOG

Histogramme des orientations de gradient : Detection

Détection par les patch HOG & Felzenwalb

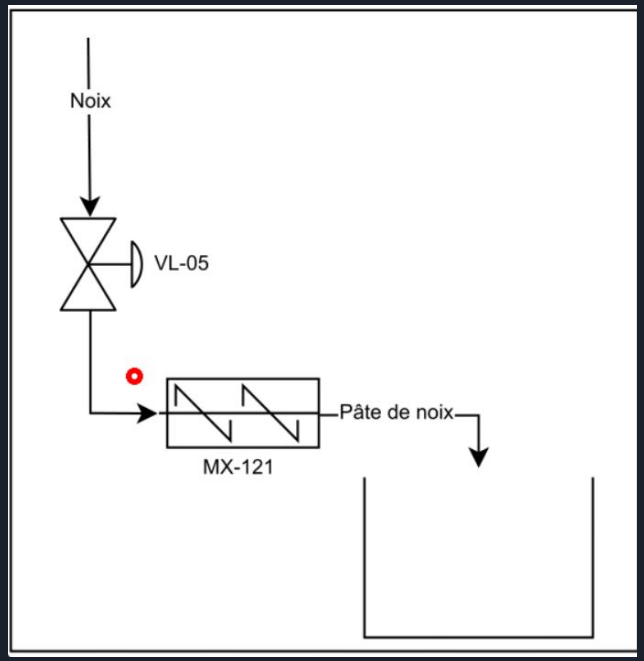


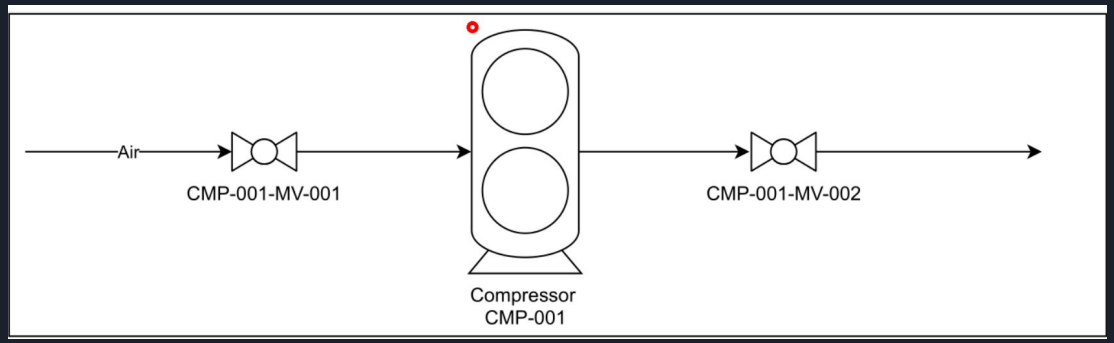


HOG

Histogramme des orientations de gradient : Detection

Détection par les patch HOG & Felzenwalb





Démonstration