Global wheet detection using SDK

In [1]:
```
from azure.cognitiveservices.vision.customvision.training import CustomVisionTrainingClient
from azure.cognitiveservices.vision.customvision.prediction import CustomVisionPredictionClient
from azure.cognitiveservices.vision.customvision.training.models import ImageFileCreateBatch, ImageFileCreateEnt
from msrest.authentication import ApiKeyCredentials
import time
```

In [5]:
```


veservices.azure.com/"
222ae02503e"
92b7db4da8481"
ons/f468ceaa-a610-4b88-9742-2b3e8f4ef76c/resourceGroups/Day2/providers/Microsoft.CognitiveServices/accounts/sfsf
```

In [6]:
```
credentials = ApiKeyCredentials(in_headers={"Training-key": training_key})
trainer = CustomVisionTrainingClient(ENDPOINT, credentials)
prediction_credentials = ApiKeyCredentials(in_headers={"Prediction-key": prediction_key})
predictor = CustomVisionPredictionClient(ENDPOINT, prediction_credentials)
```

In [7]:
```
# Detect model
publish_iteration_name = "detectModel"

# Find the object detection domain
obj_detection_domain = next(domain for domain in trainer.get_domains() if domain.type == "ObjectDetection" and d

# Create a new project
print ("Creating project...")
project = trainer.create_project("My Detection Project", domain_id=obj_detection_domain.id)
```

```
Creating project...
```

In [8]:
```
# Make two tags in the new project
wheathead_tag = trainer.create_tag(project.id, "wheathead")
no_wheathead_tag = trainer.create_tag(project.id, "no_wheathead")
```

In [9]:
```
wheathead_image_regions ={
    'weedhead_1':[0.686978 ,0.283806, 0.123539, 0.227045],
    'weedhead_2':[0.785893, 0.075125, 0.428214, 0.083472],
    'weedhead_3':[0.287980, 0.769616, 0.170284, 0.166945],
    'weedhead_4':[0.083472 ,0.058431 ,0.071786 ,0.106845],
    'weedhead_5':[0.459933, 0.859766, 0.110184, 0.063439],
    'weedhead_6':[0.345576 ,0.425710, 0.235392 ,0.126878],
    'weedhead_7':[0.441569, 0.439065 ,0.140234, 0.153589],
    'weedhead_8':[0.221202 ,0.169449, 0.110184 ,0.242070],
    'weedhead_9':[0.621035, 0.335559, 0.121870 ,0.090150],
    'weedhead_10':[0.200334, 0.028381 ,0.081803, 0.056761],
    'weedhead_11':[0.207012 ,0.204508 ,0.131886 ,0.128548],
    'weedhead_12':[0.657763 ,0.234558, 0.045075 ,0.085142],
    'weedhead_13':[0.550918, 0.270451 ,0.141903 ,0.100167],
    'weedhead_14':[ 0.419866 ,0.170284 ,0.143573 ,0.090150],
    'weedhead_15':[ 0.742070 ,0.304674 ,0.116861 ,0.095159],
    'weedhead_16':[0.535058, 0.465776, 0.086811 ,0.093489],
    'weedhead_17':[0.513356 ,0.326377, 0.113523 ,0.058431],
    'weedhead_18':[0.261269 ,0.500835, 0.230384 ,0.076795],
    'weedhead_19':[ 0.381469 ,0.191987 ,0.090150 ,0.163606],
    'weedhead_20':[0.884808, 0.702838 ,0.061770, 0.143573]

}

no_wheathead_image_regions = {
    "no_wheathead_1": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_2": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_3": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_4": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_5": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_6": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_7": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_8": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_9": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_10": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_11": [ 0.0, 0.0, 0.0, 0.0 ],
    "no_wheathead_12": [ 0.0, 0.0, 0.0, 0.0],
    "no_wheathead_13": [ 0.0, 0.0, 0.0, 0.0],
    "no_wheathead_14": [ 0.0, 0.0, 0.0, 0.0],
    "no_wheathead_15": [ 0.0, 0.0, 0.0, 0.0],
    "no_wheathead_16": [ 0.0, 0.0, 0.0, 0.0],
    "no_wheathead_17": [ 0.0, 0.0, 0.0, 0.0],
```

```
    "no_wheathead_18": [0.0, 0.0, 0.0, 0.0],
    "no_wheathead_19": [ 0.0, 0.0, 0.0, 0.0],
    "no_wheathead_20": [ 0.0, 0.0, 0.0, 0.0],
    "no_wheathead_21": [ 0.0, 0.0, 0.0, 0.0],
    "no_wheathead_22": [ 0.0, 0.0, 0.0, 0.0]
}
```

In [14]:
```
# Update this with the path to where you downloaded the images.
base_image_location = "C:/Users/Jaswanth Reddy/Desktop/Image dataset/api_weed/"

# Go through the data table above and create the images
print ("Adding images...")
tagged_images_with_regions = []
i=20
for file_name in wheathead_image_regions.keys():
    x,y,w,h = wheathead_image_regions[file_name]
    regions = [ Region(tag_id=wheathead_tag.id, left=x,top=y,width=w,height=h) ]

    with open(base_image_location + "Weed_yes/" + str(i)+".jpg", mode="rb") as image_contents:
        i=i+1
        tagged_images_with_regions.append(ImageFileCreateEntry(name=file_name, contents=image_contents.read(), r
j=1
for file_name in no_wheathead_image_regions.keys():
    x,y,w,h = no_wheathead_image_regions[file_name]
    regions = [ Region(tag_id=no_wheathead_tag.id, left=x,top=y,width=w,height=h) ]

    with open(base_image_location + "weed_no/" + file_name + ".jpg", mode="rb") as image_contents:
        tagged_images_with_regions.append(ImageFileCreateEntry(name=file_name, contents=image_contents.read(), r

upload_result = trainer.create_images_from_files(project.id, ImageFileCreateBatch(images=tagged_images_with_regi
if not upload_result.is_batch_successful:
    print("Image batch upload failed.")
    for image in upload_result.images:
        print("Image status: ", image.status)
    exit(-1)
```

```
Adding images...
Image batch upload failed.
Image status:  OK
Image status:  OKDuplicate
Image status:  OK
Image status:  OK
Image status:  OKDuplicate
Image status:  OKDuplicate
Image status:  OK
Image status:  OKDuplicate
Image status:  OK
Image status:  OK
Image status:  OK
```

```
Image status:  OK
Image status:  OKDuplicate
Image status:  OK
Image status:  OK
Image status:  OK
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Image status:  OK
Image status:  OK
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Image status:  OK
Image status:  OK
Image status:  OK
```

In [15]:
```
print ("Training...")
iteration = trainer.train_project(project.id)
while (iteration.status != "Completed"):
    iteration = trainer.get_iteration(project.id, iteration.id)
    print ("Training status: " + iteration.status)
    time.sleep(1)
```

```
Training status: Training
```

In [16]:
```
# The iteration is now trained. Publish it to the project endpoint
trainer.publish_iteration(project.id, iteration.id, publish_iteration_name, prediction_resource_id)
print ("Done!")
```

```
Done!
```

In [17]:
```
# Predicting an image

with open(base_image_location + "/weed_no/no_wheathead_10.jpg", mode="rb") as test_data:
    results = predictor.detect_image(project.id, publish_iteration_name, test_data)

# Display the results.
for prediction in results.predictions:
    print("\t" + prediction.tag_name + ": {0:.2f}% bbox.left = {1:.2f}, bbox.top = {2:.2f}, bbox.width = {3:.2f}
```

```
	wheathead: 1.70% bbox.left = 0.71, bbox.top = 0.49, bbox.width = 0.05, bbox.height = 0.05
	no_wheathead: 1.29% bbox.left = 0.79, bbox.top = 0.53, bbox.width = 0.04, bbox.height = 0.06
	wheathead: 1.20% bbox.left = 0.79, bbox.top = 0.53, bbox.width = 0.04, bbox.height = 0.06
	no_wheathead: 1.19% bbox.left = 0.42, bbox.top = 0.54, bbox.width = 0.04, bbox.height = 0.04
	no_wheathead: 1.07% bbox.left = 0.71, bbox.top = 0.49, bbox.width = 0.05, bbox.height = 0.05
	no_wheathead: 0.98% bbox.left = 0.42, bbox.top = 0.66, bbox.width = 0.04, bbox.height = 0.05
	no_wheathead: 0.87% bbox.left = 0.50, bbox.top = 0.62, bbox.width = 0.04, bbox.height = 0.06
	wheathead: 0.81% bbox.left = 0.59, bbox.top = 0.91, bbox.width = 0.04, bbox.height = 0.05
	no_wheathead: 0.79% bbox.left = 0.79, bbox.top = 0.62, bbox.width = 0.05, bbox.height = 0.05
	wheathead: 0.77% bbox.left = 0.83, bbox.top = 0.95, bbox.width = 0.06, bbox.height = 0.05
	no_wheathead: 0.73% bbox.left = 0.58, bbox.top = 0.41, bbox.width = 0.04, bbox.height = 0.06
	no_wheathead: 0.71% bbox.left = 0.00, bbox.top = 0.62, bbox.width = 0.24, bbox.height = 0.38
	no_wheathead: 0.71% bbox.left = 0.83, bbox.top = 0.62, bbox.width = 0.05, bbox.height = 0.04
	no_wheathead: 0.70% bbox.left = 0.50, bbox.top = 0.58, bbox.width = 0.04, bbox.height = 0.06
	no_wheathead: 0.69% bbox.left = 0.62, bbox.top = 0.68, bbox.width = 0.15, bbox.height = 0.18
	no_wheathead: 0.67% bbox.left = 0.13, bbox.top = 0.74, bbox.width = 0.28, bbox.height = 0.26
	no_wheathead: 0.67% bbox.left = 0.70, bbox.top = 0.63, bbox.width = 0.14, bbox.height = 0.19
	no_wheathead: 0.67% bbox.left = 0.46, bbox.top = 0.28, bbox.width = 0.04, bbox.height = 0.06
	no_wheathead: 0.65% bbox.left = 0.45, bbox.top = 0.56, bbox.width = 0.13, bbox.height = 0.17
	wheathead: 0.63% bbox.left = 0.75, bbox.top = 0.79, bbox.width = 0.05, bbox.height = 0.04
	no_wheathead: 0.59% bbox.left = 0.42, bbox.top = 0.58, bbox.width = 0.04, bbox.height = 0.06
	no_wheathead: 0.59% bbox.left = 0.62, bbox.top = 0.41, bbox.width = 0.04, bbox.height = 0.06
	no_wheathead: 0.58% bbox.left = 0.59, bbox.top = 0.37, bbox.width = 0.28, bbox.height = 0.47
	no_wheathead: 0.56% bbox.left = 0.20, bbox.top = 0.88, bbox.width = 0.14, bbox.height = 0.12
	no_wheathead: 0.55% bbox.left = 0.63, bbox.top = 0.46, bbox.width = 0.04, bbox.height = 0.05
	no_wheathead: 0.55% bbox.left = 0.46, bbox.top = 0.62, bbox.width = 0.04, bbox.height = 0.06
	no_wheathead: 0.53% bbox.left = 0.63, bbox.top = 0.49, bbox.width = 0.04, bbox.height = 0.05
	no_wheathead: 0.53% bbox.left = 0.79, bbox.top = 0.20, bbox.width = 0.04, bbox.height = 0.06
	no_wheathead: 0.53% bbox.left = 0.70, bbox.top = 0.57, bbox.width = 0.30, bbox.height = 0.43
	no_wheathead: 0.52% bbox.left = 0.16, bbox.top = 0.83, bbox.width = 0.38, bbox.height = 0.17
	no_wheathead: 0.52% bbox.left = 0.75, bbox.top = 0.50, bbox.width = 0.04, bbox.height = 0.05
	no_wheathead: 0.52% bbox.left = 0.13, bbox.top = 0.71, bbox.width = 0.04, bbox.height = 0.05
```

```
wheathead: 0.52% bbox.left = 0.58, bbox.top = 0.84, bbox.width = 0.04, bbox.height = 0.04
no_wheathead: 0.51% bbox.left = 0.16, bbox.top = 0.79, bbox.width = 0.04, bbox.height = 0.05
no_wheathead: 0.50% bbox.left = 0.29, bbox.top = 0.84, bbox.width = 0.13, bbox.height = 0.16
```

In [18]:
```
# Predicting an image

with open(base_image_location + "/weed_yes/10.jpg", mode="rb") as test_data:
    results = predictor.detect_image(project.id, publish_iteration_name, test_data)

# Display the results.
for prediction in results.predictions:
    print("\t" + prediction.tag_name + ": {0:.2f}% bbox.left = {1:.2f}, bbox.top = {2:.2f}, bbox.width = {3:.2f}
```

```
wheathead: 0.55% bbox.left = 0.75, bbox.top = 0.52, bbox.width = 0.04, bbox.height = 0.08
wheathead: 0.54% bbox.left = 0.93, bbox.top = 0.17, bbox.width = 0.04, bbox.height = 0.05
wheathead: 0.54% bbox.left = 0.08, bbox.top = 0.66, bbox.width = 0.05, bbox.height = 0.05
wheathead: 0.54% bbox.left = 0.21, bbox.top = 0.33, bbox.width = 0.04, bbox.height = 0.04
wheathead: 0.54% bbox.left = 0.58, bbox.top = 0.22, bbox.width = 0.14, bbox.height = 0.18
wheathead: 0.54% bbox.left = 0.08, bbox.top = 0.03, bbox.width = 0.05, bbox.height = 0.05
no_wheathead: 0.54% bbox.left = 0.66, bbox.top = 0.79, bbox.width = 0.34, bbox.height = 0.21
wheathead: 0.53% bbox.left = 0.58, bbox.top = 0.41, bbox.width = 0.04, bbox.height = 0.06
wheathead: 0.52% bbox.left = 0.96, bbox.top = 0.54, bbox.width = 0.04, bbox.height = 0.05
wheathead: 0.52% bbox.left = 0.75, bbox.top = 0.20, bbox.width = 0.05, bbox.height = 0.05
wheathead: 0.52% bbox.left = 0.62, bbox.top = 0.03, bbox.width = 0.04, bbox.height = 0.05
no_wheathead: 0.52% bbox.left = 0.00, bbox.top = 0.90, bbox.width = 0.04, bbox.height = 0.07
wheathead: 0.52% bbox.left = 0.66, bbox.top = 0.10, bbox.width = 0.14, bbox.height = 0.18
wheathead: 0.52% bbox.left = 0.92, bbox.top = 0.08, bbox.width = 0.04, bbox.height = 0.05
no_wheathead: 0.52% bbox.left = 0.96, bbox.top = 0.87, bbox.width = 0.04, bbox.height = 0.05
wheathead: 0.52% bbox.left = 0.29, bbox.top = 0.00, bbox.width = 0.05, bbox.height = 0.04

wheathead: 0.51% bbox.left = 0.37, bbox.top = 0.52, bbox.width = 0.14, bbox.height = 0.18
wheathead: 0.51% bbox.left = 0.42, bbox.top = 0.00, bbox.width = 0.04, bbox.height = 0.05
wheathead: 0.51% bbox.left = 0.54, bbox.top = 0.12, bbox.width = 0.05, bbox.height = 0.05
```

In [ ]: