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/"
1ab19cc93a4"
39c8b48860884"
ons/f468ceaa-a610-4b88-9742-2b3e8f4ef76c/resourceGroups/Day2/providers/Microsoft.CognitiveServices/accounts/rsdf
```

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]:
```
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 tags in the project
bike_tag = trainer.create_tag(project.id, "bike")
```

In [10]:
```
bike_image_regions = {
    "1": [ 0.477005, 0.702647, 0.067217, 0.377816],
    "2": [ 0.143868, 0.739780, 0.146226, 0.432390],
    "3": [0.122642, 0.653211, 0.183962 ,0.566669 ],
    "4": [ 0.485849, 0.698998, 0.641509 ,0.545401 ],
    "5": [0.363208 ,0.629506, 0.271226 ,0.351668 ],
    "6": [  0.621550, 0.614391, 0.346233, 0.435424],
    "7": [0.596205 ,0.547970, 0.752145 ,0.870849],
    "8": [ 0.420808 ,0.479705 ,0.131372, 0.273063 ],
    "9": [0.480356, 0.574723 ,0.432177 ,0.341328 ],
    "10": [ 0.478484 ,0.621771, 0.743417, 0.575646 ],
    "11": [ 0.419845, 0.673432, 0.696519 ,0.535055 ],
    "12": [ 0.447206, 0.540590, 0.635988 ,0.682657 ],
    "13": [ 0.466392, 0.591952 ,0.387972 ,0.542742 ],
    "14": [0.702241, 0.706170 ,0.461085 ,0.454850 ],
    "15": [ 0.739976, 0.771648, 0.234670, 0.425371],
    "16": [ 0.606203 ,0.550738, 0.701060, 0.511070],
    "17": [ 0.535241 ,0.611624, 0.758709, 0.577491 ]
}
```

In [12]:
```
base_image_location = "C:/Users/Jaswanth Reddy/Desktop/Image dataset/"

# Going through the data table above and create the images
print ("Adding images...")
tagged_images_with_regions = []
i=0
for file_name in bike_image_regions.keys():
    x,y,w,h = bike_image_regions[file_name]
    regions = [ Region(tag_id=bike_tag.id, left=x,top=y,width=w,height=h) ]

    with open(base_image_location + "bikes/" + 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...
```

In [13]:
```
# Training
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
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
Training status: Training
```

In [14]:
```
# 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 [15]:
```
# Predicting an image

with open(base_image_location + "/bikes/14.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}
```

```
bike: 11.98% bbox.left = 0.07, bbox.top = 0.58, bbox.width = 0.45, bbox.height = 0.42
bike: 8.38% bbox.left = 0.59, bbox.top = 0.69, bbox.width = 0.41, bbox.height = 0.31
bike: 4.33% bbox.left = 0.27, bbox.top = 0.59, bbox.width = 0.41, bbox.height = 0.40
bike: 2.89% bbox.left = 0.24, bbox.top = 0.77, bbox.width = 0.03, bbox.height = 0.08
bike: 2.42% bbox.left = 0.28, bbox.top = 0.83, bbox.width = 0.04, bbox.height = 0.08
bike: 1.92% bbox.left = 0.13, bbox.top = 0.93, bbox.width = 0.05, bbox.height = 0.07
bike: 1.85% bbox.left = 0.32, bbox.top = 0.67, bbox.width = 0.04, bbox.height = 0.06
bike: 1.22% bbox.left = 0.27, bbox.top = 0.77, bbox.width = 0.04, bbox.height = 0.07
bike: 0.97% bbox.left = 0.12, bbox.top = 0.15, bbox.width = 0.06, bbox.height = 0.11
bike: 0.91% bbox.left = 0.13, bbox.top = 0.25, bbox.width = 0.05, bbox.height = 0.10
bike: 0.83% bbox.left = 0.00, bbox.top = 0.00, bbox.width = 0.41, bbox.height = 0.32
bike: 0.83% bbox.left = 0.41, bbox.top = 0.68, bbox.width = 0.04, bbox.height = 0.07
bike: 0.82% bbox.left = 0.09, bbox.top = 0.16, bbox.width = 0.06, bbox.height = 0.10
bike: 0.82% bbox.left = 0.13, bbox.top = 0.00, bbox.width = 0.05, bbox.height = 0.09
bike: 0.71% bbox.left = 0.00, bbox.top = 0.55, bbox.width = 0.31, bbox.height = 0.45
bike: 0.67% bbox.left = 0.86, bbox.top = 0.72, bbox.width = 0.14, bbox.height = 0.28
bike: 0.62% bbox.left = 0.12, bbox.top = 0.78, bbox.width = 0.45, bbox.height = 0.22
bike: 0.62% bbox.left = 0.46, bbox.top = 0.57, bbox.width = 0.39, bbox.height = 0.43
bike: 0.62% bbox.left = 0.50, bbox.top = 0.00, bbox.width = 0.05, bbox.height = 0.09
bike: 0.61% bbox.left = 0.09, bbox.top = 0.93, bbox.width = 0.05, bbox.height = 0.07
bike: 0.61% bbox.left = 0.27, bbox.top = 0.00, bbox.width = 0.04, bbox.height = 0.07
bike: 0.60% bbox.left = 0.22, bbox.top = 0.00, bbox.width = 0.05, bbox.height = 0.09
bike: 0.60% bbox.left = 0.66, bbox.top = 0.68, bbox.width = 0.17, bbox.height = 0.32
bike: 0.58% bbox.left = 0.54, bbox.top = 0.00, bbox.width = 0.05, bbox.height = 0.10
bike: 0.53% bbox.left = 0.08, bbox.top = 0.64, bbox.width = 0.05, bbox.height = 0.11
bike: 0.53% bbox.left = 0.09, bbox.top = 0.00, bbox.width = 0.06, bbox.height = 0.10
bike: 0.53% bbox.left = 0.32, bbox.top = 0.00, bbox.width = 0.41, bbox.height = 0.25
```

In [ ]: