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1 from Identification import Identification
2 import csv
3
4 # Drone.py
5 # Authors: Diogo Rosário, João Raposo
6 # Description: This file defines the Drone object utilized in main.py. The objective is to simulate a drone with the following attributes:
7 # - Name: A or B or C
8 # - Confidence: Initial reputation
9 # - Json: JSON file containing predictions/identifications from corresponding models
10 # - Identifications: List of predictions/identifications from each model
11
12 class Drone():
13     def __init__(self,name, confidence, json):
14         self.name = name
15         self.confidence = confidence
16         self.json = json
17         self.identifications = self.createObject()
18
19
20
21 # Generates the identification list for each Drone object by utilizing the JSON file created during the model's prediction process.
22 def createObjects(self):
23     objects = []
24
25     for iteration in self.json.get("predictions"):
26         x = int(iteration.get("x"))
27         y = int(iteration.get("y"))
28         width = int(iteration.get("width"))
29         height = int(iteration.get("height"))
30         ident_confidence = iteration.get("confidence")
31         class_type = iteration.get("class")
32
33         x = int(x - round(width / 2))
34         y = int(y - round(height / 2))
35         obj = Identification(x,y,width,height,ident_confidence,class_type, self.name, self.confidence)
36         objects.append(obj)
37
38     return objects
39
40 # Saves the identifications in the corresponding csv file
41 def saveInCsv(self):
42
43     if self.name == "A":
44         csv_filename = 'droneA_Identification.csv'
45         with open(csv_filename, 'w', newline='') as file:
46             writer = csv.writer(file)
47             writer.writerow(['Identification', 'x', 'y', 'width', 'height', 'confidence', 'class_type'])
48
49             for i, identification in enumerate(self.identifications, start=1):
50                 writer.writerow([f'identification {i}', identification.x, identification.y, identification.width,
51                                 identification.height, identification.confidence, identification.class_type])
52
53             print(f"CSV file '{csv_filename}' has been created.")
54
55     elif self.name == "B":
56         csv_filename = 'droneB_Identification.csv'
57         with open(csv_filename, 'w', newline='') as file:
58             writer = csv.writer(file)
59             writer.writerow(['Identification', 'x', 'y', 'width', 'height', 'confidence', 'class_type'])
60
61             for i, identification in enumerate(self.identifications, start=1):
62                 writer.writerow([f'identification {i}', identification.x, identification.y, identification.width,
63                                 identification.height, identification.confidence, identification.class_type])
64
65             print(f"CSV file '{csv_filename}' has been created.")
66
67     elif self.name == "C":
68         csv_filename = 'droneC_Identification.csv'
69         with open(csv_filename, 'w', newline='') as file:
70             writer = csv.writer(file)
71             writer.writerow(['Identification', 'x', 'y', 'width', 'height', 'confidence', 'class_type'])
72
73             for i, identification in enumerate(self.identifications, start=1):
74                 writer.writerow([f'identification {i}', identification.x, identification.y, identification.width,
75                                 identification.height, identification.confidence, identification.class_type])
76
77             print(f"CSV file '{csv_filename}' has been created.")
78
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