IT314 - Software Engineering
Lab 5 - Static Analysis
Group - G3

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Selected tool:

1. **Pylint**: It is a static code analysis tool to identify errors in Python code and helps programmers enforce good coding style. This tool enables them debugging complex code with less manual work. It is one of the tools which gets used for test-driven development (TDD).

   Below are the errors and suggestions made by the Pylint tools on our code.

```python
import time
import cv2
cap = cv2.VideoCapture(0)   #Path to footage
car_cascade = cv2.CascadeClassifier('cars.xml')  #Path to cars.xml
#Coordinates of polygon in frame::: [[x1,y1],[x2,y2],[x3,y3],[x4,y4]]
coord=[[637,352],[904,352],[631,512],[952,512]]
#Distance between two horizontal lines in (meter)
dist = 3
while True:
    ret, img = cap.read()
    gray = cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)
    cars=car_cascade.detectMultiScale(gray,1.8,2)
    for (x,y,w,h) in cars:
        cv2.rectangle(img,(x,y),(x+w,y+h),(225,0,0),2)
    cv2.line(img, (coord[0][0],coord[0][1]),(coord[1][0],coord[1][1]),(0,0,255),2)   #First horizontal line
    cv2.line(img, (coord[0][0],coord[0][1]), (coord[2][0],coord[2][1]), (0, 0, 255), 2) #Vertical left line
    cv2.line(img, (coord[2][0],coord[2][1]), (coord[3][0], coord[3][1]), (0, 0, 255), 2) #Second horizontal line
    cv2.line(img, (coord[1][0],coord[1][1]), (coord[3][0], coord[3][1]), (0, 0, 255), 2) #Vertical right line
    for (x, y, w, h) in cars:
        if(x>=coord[0][0] and y==coord[0][1]):
            cv2.line(img, (coord[0][0], coord[0][1]), (coord[1][0], coord[1][1]), (0, 255,0), 2) #Changes line color to green
            tim1= time.time() #Initial time
            print("Car Entered.")
        if (x>=coord[2][0] and y==coord[2][1]):
            cv2.line(img, (coord[2][0],coord[2][1]), (coord[3][0], coord[3][1]), (0, 0, 255), 2) #Changes line color to green
            tim2 = time.time() #Final time
            print("Car Left.")
            #We know that distance is 3m
            print("Speed in (m/s) is:", dist/((tim2-tim1)))
    cv2.imshow('img',img) #Shows the frame
    if cv2.waitKey(20) & 0xFF == ord('q'):
        break
cap.release()
cv2.destroyAllWindows()
```

```
⊗ Module 'cv2' has no 'VideoCapture' member  Pylint(E1101:no-member)  [Ln 3, Col 7]
⊗ Module 'cv2' has no 'CascadeClassifier' member  Pylint(E1101:no-member)  [Ln 4, Col 15]
⊗ Module 'cv2' has no 'cvtColor' member  Pylint(E1101:no-member)  [Ln 11, Col 12]
⊗ Module 'cv2' has no 'COLOR_BGR2GRAY' member  Pylint(E1101:no-member)  [Ln 11, Col 29]
⊗ Module 'cv2' has no 'rectangle' member  Pylint(E1101:no-member)  [Ln 14, Col 9]
⊗ Module 'cv2' has no 'line' member  Pylint(E1101:no-member)  [Ln 15, Col 5]
⊗ Module 'cv2' has no 'line' member  Pylint(E1101:no-member)  [Ln 16, Col 5]
⊗ Module 'cv2' has no 'line' member  Pylint(E1101:no-member)  [Ln 17, Col 5]
⊗ Module 'cv2' has no 'line' member  Pylint(E1101:no-member)  [Ln 18, Col 5]
⊗ Module 'cv2' has no 'line' member  Pylint(E1101:no-member)  [Ln 21, Col 13]
⊗ Module 'cv2' has no 'line' member  Pylint(E1101:no-member)  [Ln 25, Col 13]
⊗ Module 'cv2' has no 'imshow' member  Pylint(E1101:no-member)  [Ln 30, Col 5]
⊗ Module 'cv2' has no 'waitKey' member  Pylint(E1101:no-member)  [Ln 31, Col 8]
⊗ Module 'cv2' has no 'destroyAllWindows' member  Pylint(E1101:no-member)  [Ln 34, Col 1]
ⓘ Missing module docstring  Pylint(C0114:missing-module-docstring)  [Ln 1, Col 1]
ⓘ Constant name "dist" doesn't conform to UPPER_CASE naming style  Pylint(C0103:invalid-name)  [Ln 8, Col 1]
ⓘ Line too long (107/100)  Pylint(C0301:line-too-long)  [Ln 15, Col 1]
ⓘ Line too long (107/100)  Pylint(C0301:line-too-long)  [Ln 16, Col 1]
ⓘ Line too long (112/100)  Pylint(C0301:line-too-long)  [Ln 17, Col 1]
ⓘ Line too long (109/100)  Pylint(C0301:line-too-long)  [Ln 18, Col 1]
ⓘ Line too long (125/100)  Pylint(C0301:line-too-long)  [Ln 21, Col 1]
ⓘ Line too long (125/100)  Pylint(C0301:line-too-long)  [Ln 25, Col 1]
ⓘ Final newline missing  Pylint(C0304:missing-final-newline)  [Ln 34, Col 1]
```

Github link for below code snippet:

https://github.com/nisharg2606/Human-speed-detection.git

```python
def startRec(self):
    cap = cv2.VideoCapture(0)
    fourcc = cv2.VideoWriter_fourcc(*'XVID')
    self.input_name = "inp"+str(time.strftime("%Y%m%d-%H%M%S"))+".avi"
    temp = str(os.path.dirname(os.path.abspath(__file__)))
    self.output_name = temp+"\out"+str(time.strftime("%Y%m%d-%H%M%S"))+".avi"
    out = cv2.VideoWriter(self.input_name, fourcc, 8.0, (640, 480))
    flag = FALSE
    while(flag==False):
        ret,frame = cap.read()
        out.write(frame)
        cv2.imshow('video',frame)
        if cv2.waitKey(1) & 0xFF == ord('a'):
            break
    cap.release()
    out.release()
    cv2.destroyAllWindows()
    # y1,y2 = self.startpro()
    # speed2.functionCall('output11.avi','finaloutput111.avi',y1,y2)
```

⊗ Module 'cv2' has no 'VideoCapture' member Pylint(E1101:no-member) [Ln 92, Col 15]

⊗ Module 'cv2' has no 'VideoWriter_fourcc' member Pylint(E1101:no-member) [Ln 93, Col 18]

⊗ Module 'cv2' has no 'VideoWriter' member Pylint(E1101:no-member) [Ln 97, Col 15]

⊗ Module 'cv2' has no 'imshow' member Pylint(E1101:no-member) [Ln 102, Col 13]

⊗ Module 'cv2' has no 'waitKey' member Pylint(E1101:no-member) [Ln 103, Col 16]

⊗ Module 'cv2' has no 'destroyAllWindows' member Pylint(E1101:no-member) [Ln 107, Col 9]

⚠ Wildcard import tkinter Pylint(W0401:wildcard-import) [Ln 1, Col 1]

⚠ Unused import(s) enum, types, TclError, re, wantobjects, TkVersion, TclVersion, READABLE, WRITABLE, EXCEPTION, EventType, Event, NoDefaultRoo

⚠ Unused import PIL.Image Pylint(W0611:unused-import) [Ln 7, Col 1]

⚠ Unused import PIL.ImageTk Pylint(W0611:unused-import) [Ln 7, Col 1]

⚠ Statement seems to have no effect Pylint(W0104:pointless-statement) [Ln 17, Col 9]

⚠ Anomalous backslash in string: '\o'. String constant might be missing an r prefix. Pylint(W1401:anomalous-backslash-in-string) [Ln 96, Col 34]

⚠ Unused variable 'ret' Pylint(W0612:unused-variable) [Ln 100, Col 13]

⚠ Attribute 'pause' defined outside __init__ Pylint(W0201:attribute-defined-outside-init) [Ln 113, Col 9]

⚠ Attribute 'filename' defined outside __init__ Pylint(W0201:attribute-defined-outside-init) [Ln 115, Col 9]

⚠ Anomalous backslash in string: '\o'. String constant might be missing an r prefix. Pylint(W1401:anomalous-backslash-in-string) [Ln 120, Col 34]

ⓘ Missing module docstring Pylint(C0114:missing-module-docstring) [Ln 1, Col 1]

ⓘ Imports from package tkinter are not grouped Pylint(C0412:ungrouped-imports) [Ln 5, Col 1]

ⓘ Multiple imports on one line (PIL.Image, PIL.ImageTk) Pylint(C0410:multiple-imports) [Ln 7, Col 1]

ⓘ Missing function or method docstring Pylint(C0116:missing-function-docstring) [Ln 12, Col 1]

ⓘ Missing class docstring Pylint(C0115:missing-class-docstring) [Ln 19, Col 1]

ⓘ Class name "videoGUI" doesn't conform to PascalCase naming style Pylint(C0103:invalid-name) [Ln 19, Col 1]

ⓘ Trailing whitespace Pylint(C0303:trailing-whitespace) [Ln 27, Col 1]

ⓘ Line too long (104/100) Pylint(C0301:line-too-long) [Ln 43, Col 1]

ⓘ Missing function or method docstring Pylint(C0116:missing-function-docstring) [Ln 60, Col 5]