**CPSC 425 - Assignment 1**

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A picture containing text

Description automatically generated

Part 2

A screenshot of a cell phone

Description automatically generated

Part 3

A screenshot of a cell phone

Description automatically generated

>>> import a2

>>> a2.ShowPyramid(MakePyramid("faces/judybats.jpg", 20))

>>>



Part 4

A screenshot of a cell phone

Description automatically generated

>>> import a2

>>> threshold = 0.6

>>> pyramid = a2.MakePyramid("./faces/judybats.jpg", 20)

>>> template = "./faces/template.jpg"

A picture containing book, text, photo

Description automatically generated

Part 5

First try,

for threshold = 0.6

we count:

|  |  |  |
| --- | --- | --- |
| Images | **False positive** | **False negative** |
| Family | 0 | 2 |
| Tree | 2 | 0 |
| Fans | 1 | 2 |
| Judybats | 0 | 1 |
| Sports | 0 | 1 |
| Students | 2 | 4 |
| Total | 5 | 10 |

for threshold = 0.55

we count:

|  |  |  |
| --- | --- | --- |
| Images | **False positive** | **False negative** |
| Family | 0 | 1 |
| Tree | 4 | 0 |
| Fans | 2 | 2 |
| Judybats | 1 | 1 |
| Sports | 1 | 1 |
| Students | 4 | 3 |
| Total | 12 | 8 |

As we saw above, the threshold of 0.55 is equally rate comparing to 0.6, let’s take 0.575 to try again.

for threshold = 0.575

we count:

|  |  |  |
| --- | --- | --- |
| Images | **False positive** | **False negative** |
| Family | 0 | 1 |
| Tree | 3 | 0 |
| Fans | 1 | 2 |
| Judybats | 1 | 1 |
| Sports | 0 | 1 |
| Students | 3 | 4 |
| Total | 8 | 9 |

As we see, the threshold 0.575 is close, let’s take 0.571,

**for threshold = 0.571**

we count:

|  |  |  |
| --- | --- | --- |
| Images | **False positive** | **False negative** |
| Family | 0 | 1 |
| Tree | 3 | 0 |
| Fans | 1 | 2 |
| Judybats | 1 | 1 |
| Sports | 0 | 1 |
| Students | 4 | 4 |
| **Total** | **9** | **9** |

**Therefore, my final threshold is 0.571.**

**A tree with snow on the ground

Description automatically generatedA baseball player holding a bat on a field

Description automatically generatedA group of people posing for the camera

Description automatically generatedA picture containing photo

Description automatically generatedA picture containing person, building, outdoor, man

Description automatically generated**

**A picture containing person, child, indoor, little

Description automatically generated**

Part 6

Recall rate:

|  |  |
| --- | --- |
| Images | **Recall rate** |
| Family | 2/3 |
| Tree | 0/0 |
| Fans | 1/3 |
| Judybats | 4/5 |
| Sports | 0/1 |
| Students | 23/27 |

NCC method has very low rate on both Fans.jpg and Sports.jpg. As we observed, they faces that are tilted, hiding in the dark, or covered by helmet/hats not picked up. We found that all false negative cases exist in common as they are having low light condition, different orientation, or partial occlusion, as NCC method is not robust to above cases.