



Міністерство освіти і науки України
Національний технічний університет України
“Київський політехнічний інститут імені Ігоря Сікорського”
Факультет інформатики та обчислювальної техніки
Кафедра автоматики та управління в технічних системах

Лабораторна робота №4

Розпізнавання людини на фото з допомогою бібліотеки Dlib

Виконала

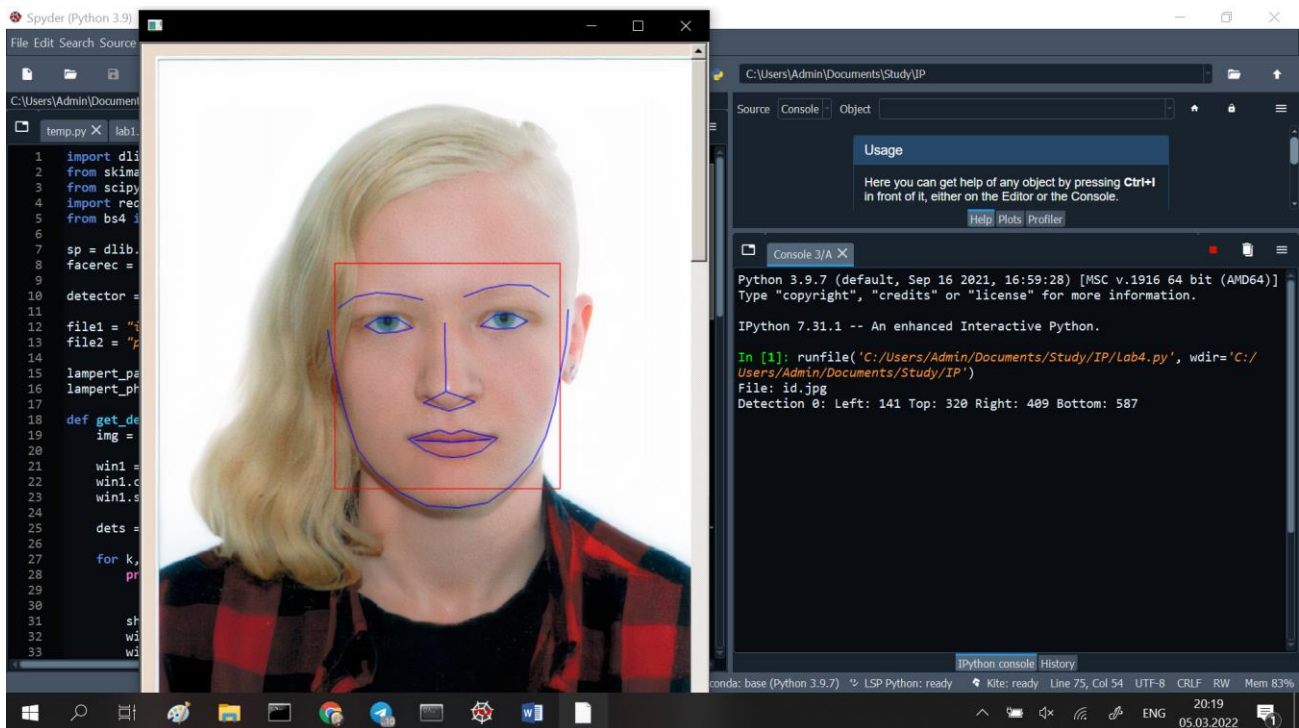
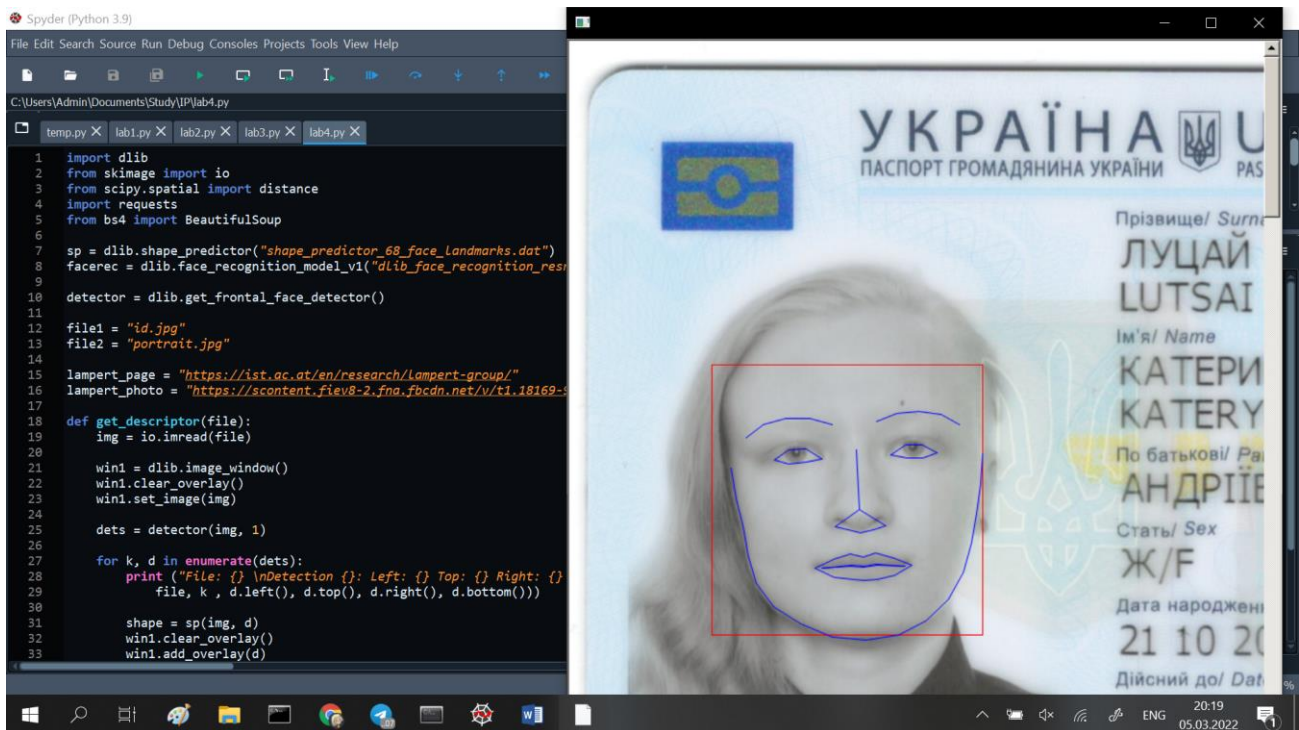
студентка групи IT-91:

Луцай Катерина

Перевірила:

пос. Альперт М. Й.

Київ 2022



Spyder (Python 3.9)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Admin\Documents\Study\IP\lab4.py

```

25  dets = detector(img, 1)
26
27  for k, d in enumerate(dets):
28      print ("File: {} \nDetection {}: Left: {} Top: {} Right: {} Bottom: {}".format(
29          file, k, d.left(), d.top(), d.right(), d.bottom()))
30
31      shape = sp(img, d)
32      win1.clear_overlay()
33      win1.add_overlay(d)
34      win1.add_overlay(shape)
35      win1.wait_for_keypress('q')
36
37      return facerec.compute_face_descriptor(img, shape)
38
39  def detect_similar(file, people):
40      img = io.imread(file)
41
42      win1 = dlib.image_window()
43      win1.clear_overlay()
44      win1.set_image(img)
45
46      dets = detector(img, 1)
47      print(f"Знайдено {len(dets)} обличчя на груповому фото")
48
49      for k, d in enumerate(dets):
50          shape = sp(img, d)
51          face_descriptor1 = facerec.compute_face_descriptor(img, shape)
52          found = False
53          a_min = 1
54
55          for person, descriptor in people.items():
56              face_descriptor2 = people[person]
57              a = distance.euclidean(face_descriptor1, face_descriptor2)

```

Usage

Here you can get help of any object by pressing **Ctrl+I** in front of it, either on the Editor or the Console.

Help Plots Profiler

Console 3/A X

Python 3.9.7 (default, Sep 16 2021, 16:59:28) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license()" for more information.

IPython 7.31.1 -- An enhanced Interactive Python.

In [1]: runfile('C:/Users/Admin/Documents/Study/IP/Lab4.py', wdir='C:/Users/Admin/Documents/Study/IP')
File: id.jpg
Detection 0: Left: 141 Top: 320 Right: 409 Bottom: 587
File: portrait.jpg
Detection 0: Left: 191 Top: 217 Right: 414 Bottom: 440
Відстань: 0.3677421063675381
Christoph Lampert

IPython console History

conda: base (Python 3.9.7) LSP Python: ready Kite: ready Line 75, Col 54 UTF-8 CRLF RW Mem 83%

20:20
05.03.2022

Spyder (Python 3.9)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Admin\Documents\Study\IP\lab4.py

```

52  found = False
53  a_min = 1
54
55  for person, descriptor in people.items():
56      face_descriptor2 = people[person]
57      a = distance.euclidean(face_descriptor1, face_descriptor2)
58
59      if a < 0.6:
60          print ("Detection {}: Left: {} Top: {} Right: {} Bottom: {}".format(
61              k, d.left(), d.top(), d.right(), d.bottom()))
62          print(f"Розпізнано обличчя {person}, Відстань: {a}")
63
64          win1.clear_overlay()
65          win1.add_overlay(d)
66          win1.add_overlay(shape)
67          win1.wait_for_keypress('q')
68
69          found = True
70      else:
71          if a < a_min:
72              a_min = a
73
74      if not found:
75          print(f"Detection {k} has no matches, min distance: {a_min}")
76
77  face_descriptor1 = get_descriptor(file1)
78  face_descriptor2 = get_descriptor(file2)
79  print("Відстань:", distance.euclidean(face_descriptor1, face_descriptor2))
80
81  page_data = requests.get(lampert_page).text
82  img_urls = [image.attrs.get("src") for image in BeautifulSoup(page_data, "Lxml").find_
83  img_urls = [url for url in img_urls if url and len(url) > 0]
84  img_urls = [url for url in img_urls if "profile" in url]

```

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Help Plots Profiler

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File: portrait.jpg
Detection 0: Left: 191 Top: 217 Right: 414 Bottom: 440
Відстань: 0.3677421063675381
Christoph Lampert
File: https://icp.ist.ac.at/data/img/profile/medium/ch1_ZzbYe.jpg
Detection 0: Left: 79 Top: 65 Right: 122 Bottom: 108
Ksenja Harpprecht
Неможливо розпізнати обличчя
Nikola Konstantinov

IPython console History

conda: base (Python 3.9.7) LSP Python: ready Kite: ready Line 99, Col 1 UTF-8 CRLF RW Mem 84%

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05.03.2022

Spysder (Python 3.9)

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C:\Users\Admin\Documents\Study\IP\lab4.py

```

68         found = True
69     else:
70         if a < a_min:
71             a_min = a
72
73     if not found:
74         print(f"Detection {h} has no matches, min distance: {a_min}")
75
76     face_descriptor1 = get_descriptor(file1)
77     face_descriptor2 = get_descriptor(file2)
78     print("Відстань:", distance.euclidean(face_descriptor1, face_descriptor2))
79
80     page_data = requests.get(lampert_page).text
81     img_urls = [image.attrs.get("src") for image in BeautifulSoup(page_data, "Lxml").find_
82     img_urls = [url for url in img_urls if url and len(url) > 0]
83     img_urls = [url for url in img_urls if "profile" in url]
84
85     name_texts = [p.text for p in BeautifulSoup(page_data, "Lxml").find_all("p", {"class":
86
87     Dictionary_Lampert_Group = {}
88     for i in range(len(name_texts)):
89         person = name_texts[i]
90         print(person)
91         descriptor = get_descriptor(img_urls[i])
92         if not descriptor:
93             print("Неможливо розпізнати обличчя")
94         else:
95             Dictionary_Lampert_Group[person] = descriptor
96
97     detect_similar(lampert_photo, Dictionary_Lampert_Group)
98
99

```

Usage

Here you can get help of any object by pressing Ctrl+I on the Editor or the Console.

Console 3/A X

```

Python 3.9.7 (default, Sep 16 2021, 16:09:58) [AMD64]
Type "copyright", "credits" or "license()" for more
IPython 7.31.1 -- An enhanced Interactive Python
>>> runfile('C:/Users/Admin/Documents/Study/IP/lab4.py', wdir='C:/Users/Admin/Documents/Study/IP')
File: id.jpg
Detection 0: Left: 141 Top: 320 Right: 409 Bottom: 587
File: portrait.jpg
Detection 0: Left: 191 Top: 217 Right: 414 Bottom: 440
Відстань: 0.3677421063675381
Christoph Lampert
File: https://icp.ist.ac.at/data/img/profile/medium/chl_ZzbYe.jpg
Detection 0: Left: 79 Top: 65 Right: 122 Bottom: 108
Ksenja Harpprecht
Неможливо розпізнати обличчя
Nikola Konstantinov
File: https://icp.ist.ac.at/data/img/profile/medium/nkonstan_Ok6L7.jpg
Detection 0: Left: 38 Top: 82 Right: 167 Bottom: 211
Elena-Alexandra Peste

```

IPython console History

conda: base (Python 3.9.7) LSP Python: ready Kite: ready Line 63, Col 17 UTF-8 CRLF RW Mem 83%

20:21 05.03.2022

Spysder (Python 3.9)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Admin\Documents\Study\IP\lab4.py

```

68         found = True
69     else:
70         if a < a_min:
71             a_min = a
72
73     if not found:
74         print(f"Detection {h} has no matches, min distance: {a_min}")
75
76     face_descriptor1 = get_descriptor(file1)
77     face_descriptor2 = get_descriptor(file2)
78     print("Відстань:", distance.euclidean(face_descriptor1, face_descriptor2))
79
80     page_data = requests.get(lampert_page).text
81     img_urls = [image.attrs.get("src") for image in BeautifulSoup(page_data, "Lxml").find_
82     img_urls = [url for url in img_urls if url and len(url) > 0]
83     img_urls = [url for url in img_urls if "profile" in url]
84
85     name_texts = [p.text for p in BeautifulSoup(page_data, "Lxml").find_all("p", {"class":
86
87     Dictionary_Lampert_Group = {}
88     for i in range(len(name_texts)):
89         person = name_texts[i]
90         print(person)
91         descriptor = get_descriptor(img_urls[i])
92         if not descriptor:
93             print("Неможливо розпізнати обличчя")
94         else:
95             Dictionary_Lampert_Group[person] = descriptor
96
97     detect_similar(lampert_photo, Dictionary_Lampert_Group)
98
99

```

Usage

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Console 3/A X

```

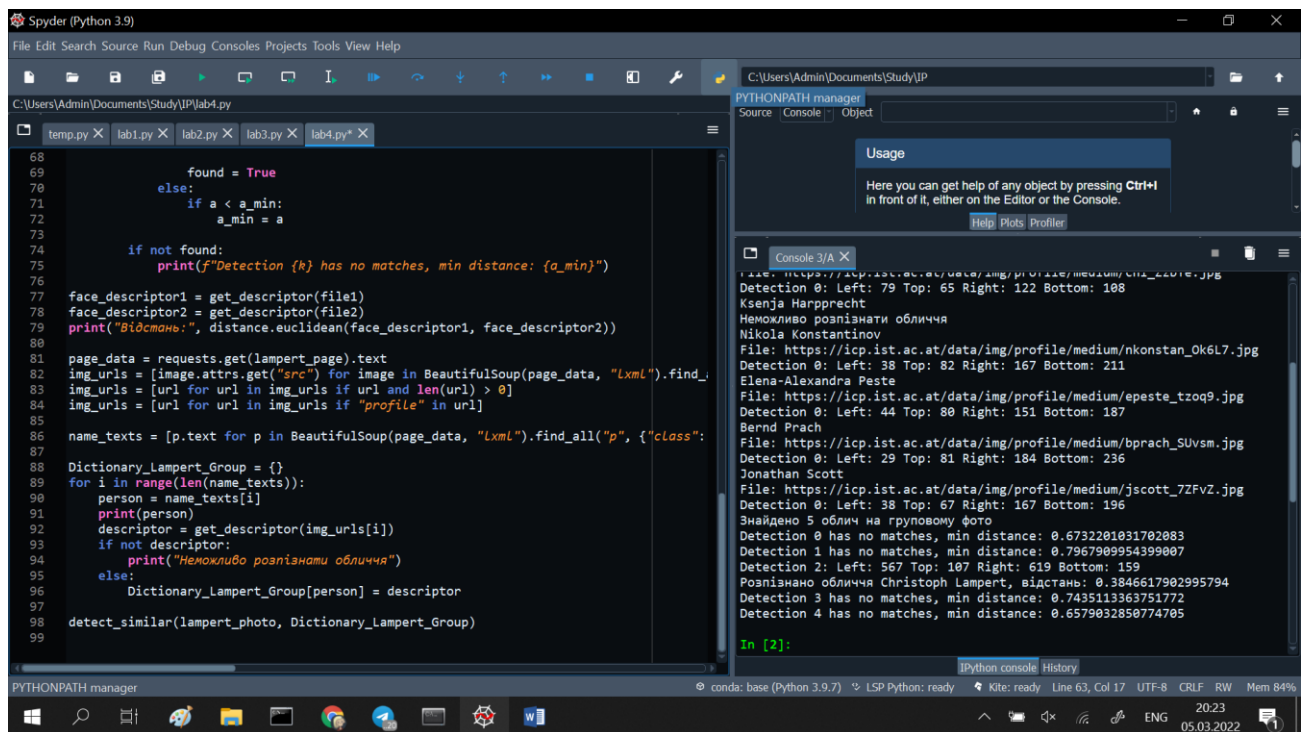
Python 3.9.7 (default, Sep 16 2021, 16:09:58) [AMD64]
Type "copyright", "credits" or "license()" for more
IPython 7.31.1 -- An enhanced Interactive Python
>>> runfile('C:/Users/Admin/Documents/Study/IP/lab4.py', wdir='C:/Users/Admin/Documents/Study/IP')
File: id.jpg
Detection 0: Left: 141 Top: 320 Right: 409 Bottom: 587
File: portrait.jpg
Detection 0: Left: 191 Top: 217 Right: 414 Bottom: 440
Відстань: 0.3677421063675381
Christoph Lampert
File: https://icp.ist.ac.at/data/img/profile/medium/chl_ZzbYe.jpg
Detection 0: Left: 79 Top: 65 Right: 122 Bottom: 108
Ksenja Harpprecht
Неможливо розпізнати обличчя
Nikola Konstantinov
File: https://icp.ist.ac.at/data/img/profile/medium/nkonstan_Ok6L7.jpg
Detection 0: Left: 38 Top: 82 Right: 167 Bottom: 211
Elena-Alexandra Peste
File: https://icp.ist.ac.at/data/img/profile/medium/epeste_tzoq9.jpg
Detection 0: Left: 47 Top: 80 Right: 151 Bottom: 187
Bernd Prach
File: https://icp.ist.ac.at/data/img/profile/medium/bprach_SUvsm.jpg
Detection 0: Left: 29 Top: 81 Right: 184 Bottom: 236
Jonathan Scott
File: https://icp.ist.ac.at/data/img/profile/medium/jscott_72FvZ.jpg
Detection 0: Left: 38 Top: 67 Right: 167 Bottom: 196
Знайдено 5 облич на груповому фото
Detection 0 has no matches, min distance: 0.6732201031702083

```

IPython console History

conda: base (Python 3.9.7) LSP Python: ready Kite: ready Line 63, Col 17 UTF-8 CRLF RW Mem 84%

20:23 05.03.2022



Висновок: було розроблено скрипт для того щоб розпізнавати обличчя на фото використовуючи попередньо навчені нейронні мережі