python™

第一章 Make images come alive with scikit-image

1. 影像處理 技術說明
2. 認識 scikit-image
3. 熟悉RGB 與 Grayscale

同學，歡迎你參加本課程

- 請關閉你的FB 、Line等溝通工具，以免影響你上課。
- 考量頻寬，請預設關閉麥克風、攝影機，若有需要再打開。
- 隨時準備好，老師會呼叫你的名字進行互動。
- 如果有緊急事情，你必需離開線上教室，請用聊天室私訊給老師，以免老師癡癡呼喚你的名字。
- 先倒好水、上個洗手間，準備上課囉^^

課程檔案下載


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學員專區
講師專區
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IT真人課程劃位
電腦分校課程劃位
外語真人課程劃位
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取消劃位
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上課權益查詢
教學平台測試
學習諮詢
常見問題
個資維護
忘記密碼
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課程檔案下載
程式語言好難學?
那是因為
你還沒學過Python!
線上老師LIVE直播教學．搶先看
巨匠電腦真人課程

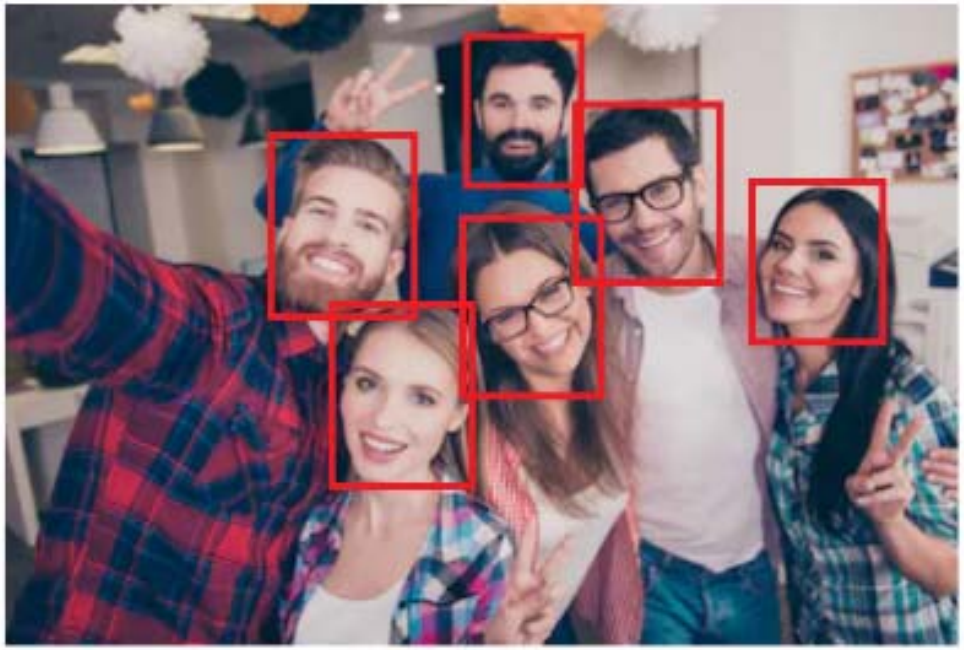
ZOOM 學員操作說明


www.pcschool.com.tw
您正在觀看蘇世宗的螢幕
查看選項
原始大小
請求遠端控制
共同註記
退出全螢幕
5 查看選項/共同註記/筆（連連看）
滑鼠
文字
筆
箭頭
擦除
格式
撤銷
重做
清除
與會者 (15)
查找參會者
張 張齡月 (我)
婷 婷婷
解除靜音
舉手
2 共享螢幕（指導演練；點評作品）
老師須先停止共享螢幕
才能請學生共享螢幕
1 聊天
解除靜音
啟動視訊
邀請
與會者
共享螢幕
聊天
錄影
4 解除靜音
3 與會者/舉手

What is image processing?

Operations on images and videos to:

- Enhance an image
- Extract useful information
- Analyze it and make decisions



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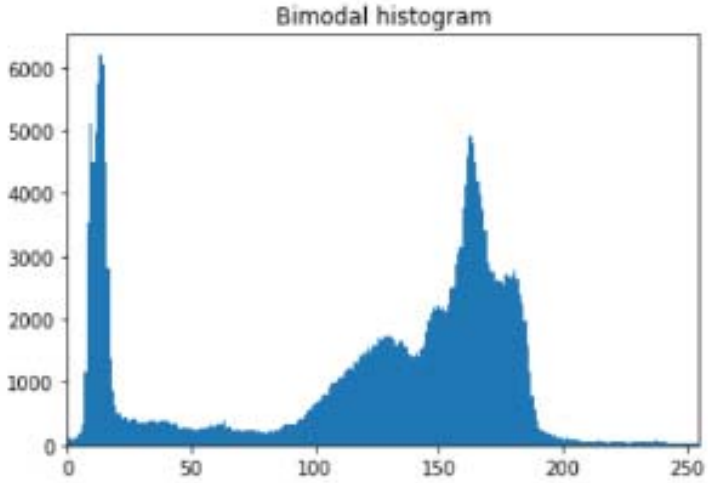


Applications

- Medical image analysis
- Artificial intelligence
- Image restoration and enhancement
- Geospatial computing
- Surveillance
- Robotic vision
- Automotive safety
- And many more...

Purposes

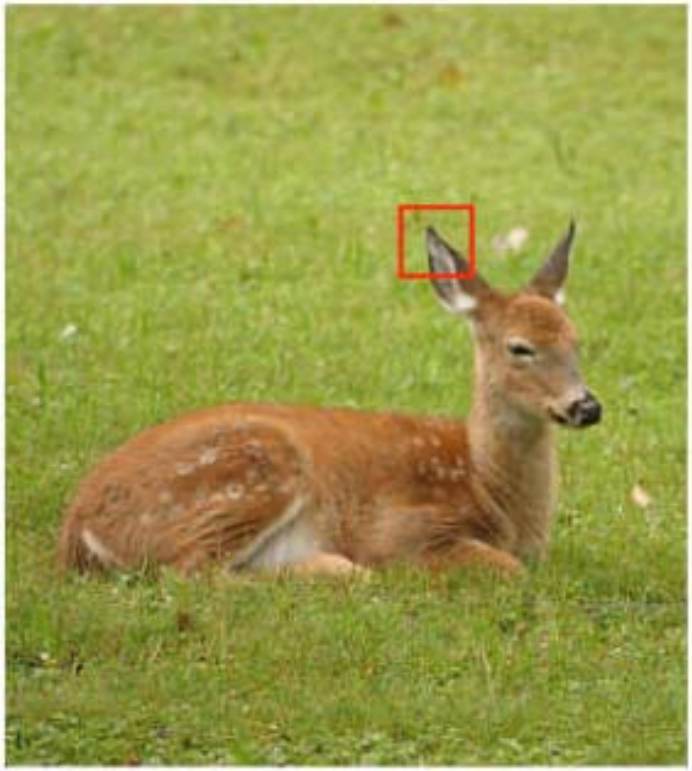
1. Visualization:
   - Objects that are not visible
2. Image sharpening and restoration
   - A better image
3. Image retrieval
   - Seek for the image of interest
4. Measurement of pattern
   - Measures various objects
5. Image Recognition
   - Distinguish objects in an image

Intro to scikit-image

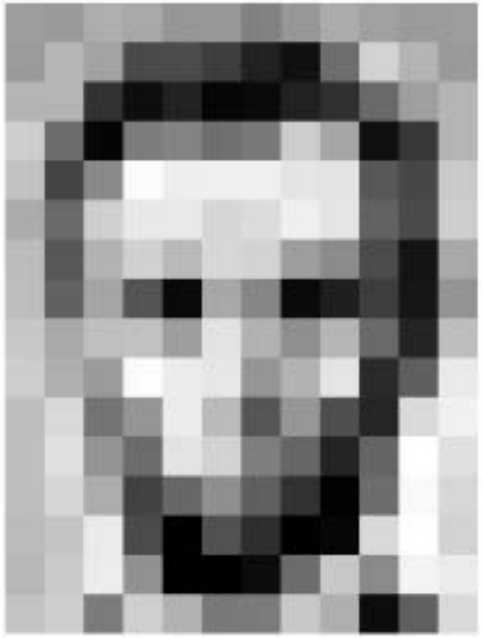
- Easy to use
- Makes use of Machine Learning
- Out of the box complex algorithms

scikit-image
image processing in python

What is an image?



What is an image?



157	153	174	168	150	152	129	151	172	161	155	156
155	182	163	74	75	62	33	17	110	210	180	154
180	180	50	14	34	6	10	33	48	106	159	181
206	109	5	124	131	111	120	204	166	15	56	180
194	68	137	251	237	239	239	228	227	87	71	201
172	105	207	233	233	214	220	239	228	98	74	206
188	88	179	209	185	215	211	158	139	75	20	169
189	97	165	84	10	168	134	11	31	62	22	148
199	168	191	193	158	227	178	143	182	106	36	190
205	174	155	252	236	231	149	178	228	43	95	234
190	216	116	149	236	187	86	150	79	38	218	241
190	224	147	108	227	210	127	102	36	101	255	224
190	214	173	66	103	143	96	50	2	109	249	215
187	196	235	75	1	81	47	0	6	217	255	211
183	202	237	145	0	0	12	108	200	138	243	236
196	206	123	207	177	121	123	200	175	13	96	218

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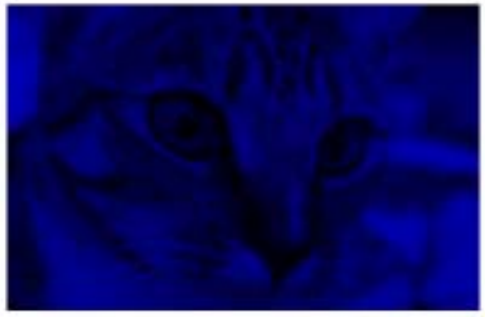
RGB channels

RGB

Red channel

Green channel

Blue channel

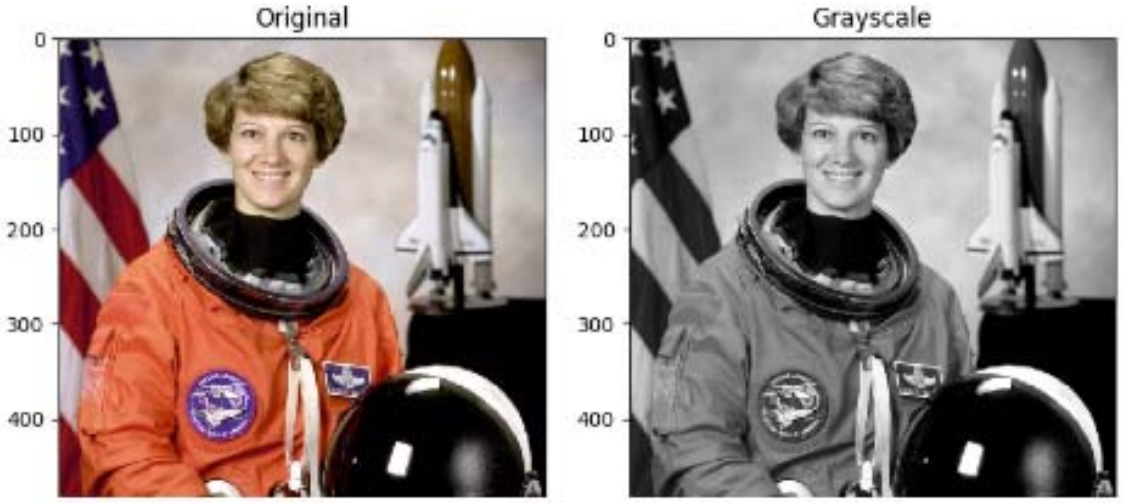


Grayscaled images

230	229	232	234	235	232	148
237	236	236	234	233	234	152
255	255	255	251	230	236	161
99	90	67	37	94	247	130
222	152	255	129	129	246	132
154	199	255	150	189	241	147
216	132	162	163	170	239	122

RGB vs Grayscale

```
from skimage import color
grayscale = color.rgb2gray(original)
rgb = color.gray2rgb(grayscale)
```



Visualizing images in the course

Don't worry about Matplotlib!

```
def show_image(image, title='Image', cmap_type='gray'):
    plt.imshow(image, cmap=cmap_type)
    plt.title(title)
    plt.axis('off')
    plt.show()
```

Visualizing images in the course

```
from skimage import color
grayscale = color.rgb2gray(original)

show_image(grayscale, "Grayscale")
```

練習時間

Make images come alive with scikit-image.ipynb

jupyter Make images come alive with scikit-image (autosaved)

Logout

File Edit View Insert Cell Kernel Widgets Help Trusted Python 3

Run Code

In [ ]: 1

練習

Is this gray or full of color? Whats the main difference between the images shown below?

Image of coffee next to coins image These images have been preloaded as coffee_image and coins_image from the scikit-image data module using:

coffee_image = data.coffee() coins_image = data.coins() Choose the right answer that best describes the main difference related to color and dimensional structure.

In the console, use the function shape() from NumPy, to obtain the image shape (Height, Width, Dimensions) and find out. NumPy is already imported as np.

Coffee

Coins

練習時間

Make images come alive with scikit-image.ipynb

jupyter Make images come alive with scikit-image (unsaved changes)

Logout

File Edit View Insert Cell Kernel Widgets Help

Trusted | Python 3

Run Code

練習

In this exercise you will load an image from scikit-image module data and make it grayscale, then compare both of them in the output.

We have preloaded a function show_image(image, title='Image') that displays the image using Matplotlib. You can check more about its parameters using ? show_image() or help(show_image) in the console.

Rocket

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