Image Processing using Python

Report of Contributions

Contribution ID: **1**   Type: **not specified**

Introduction

Tuesday 16 January 2024 13:05 (25 minutes)

General introduction to this course. Scientific questions and morphometric problems dealt with in Image Processing.

Session Classification: Lecture and Exercises

Contribution ID: **2**

Type: **not specified**

Image Basics

Tuesday 16 January 2024 13:30 (45 minutes)

Storing and acting on an image digitally.

Session Classification: Lecture and Exercises

Contribution ID: **3**　　　　　　　　　　　　　　　　Type: **not specified**

Working with scikit-image

Tuesday 16 January 2024 15:15 (30 minutes)

An introduction to scikit-image, a collection of algorithms for image processing.

Session Classification: Lecture and Exercises

Contribution ID: **4** Type: **not specified**

Now you!

Tuesday 16 January 2024 14:15 (30 minutes)

Work on and discuss the six tasks on "Image Basics" in breakout rooms.

Session Classification: Lecture and Exercises

Contribution ID: **5**   Type: **not specified**

Now you!

Tuesday 16 January 2024 15:45 (45 minutes)

Work on and discuss the three tasks on "Working with scikit-image" in breakout rooms.

Session Classification: Lecture and Exercises

Contribution ID: **6**   Type: **not specified**

Drawing and Bitwise Operations

Tuesday 16 January 2024 16:30 (30 minutes)

Basic toolkit of scikit-image operators to perform simple analyses of images based on changes in colour or shape.

Session Classification: Lecture and Exercises

Contribution ID: **7**   Type: **not specified**

Looking back

Wednesday 17 January 2024 13:00 (15 minutes)

Recapitulating yesterday's course content and discussing questions that may have appeared meanwhile.

Session Classification: Lecture and Exercises

Contribution ID: **8** Type: **not specified**

Now you!

Wednesday 17 January 2024 13:15 (1h 30m)

Work on and discuss the five tasks on "Drawing and Bitwise Operations" in breakout rooms.

Session Classification: Lecture and Exercises

Contribution ID: **9** Type: **not specified**

Creating histograms

Wednesday 17 January 2024 15:45 (15 minutes)

Understanding the distribution of colour values in an image.

Session Classification: Lecture and Exercises

Contribution ID: **10** Type: **not specified**

Blurring Images

Wednesday 17 January 2024 15:15 (30 minutes)

Blurring as a filter to modify images.

Session Classification: Lecture and Exercises

Contribution ID: **11** Type: **not specified**

Now you!

Wednesday 17 January 2024 16:00 (1 hour)

Work on and discuss the four tasks on "Creating Histograms" and "Blurring Images" in breakout rooms.

Session Classification: Lecture and Exercises

Contribution ID: **12**   Type: **not specified**

Looking back

Thursday 18 January 2024 13:00 (15 minutes)

Recapitulating yesterday's course content and discussing questions that may have appeared meanwhile.

Session Classification: Lecture and Exercises

Contribution ID: **13**   Type: **not specified**

Thresholding

Thursday 18 January 2024 13:15 (30 minutes)

Thresholding is a type of image segmentation, where we change the pixels of an image to make the image easier to analyze. You will learn how to use scikit-image functions to apply thresholding to an image.

Session Classification: Lecture and Exercises

Contribution ID: **14** Type: **not specified**

Now you!

Thursday 18 January 2024 13:45 (1 hour)

Work on and discuss the five tasks on "Thresholding" in breakout rooms (to be continued after the break).

Session Classification: Lecture and Exercises

Contribution ID: 15 Type: **not specified**

Now you!

Thursday 18 January 2024 15:15 (30 minutes)

Work on and discuss the five tasks on "Thresholding" in breakout rooms (continued).

Session Classification: Lecture and Exercises

Contribution ID: 16   Type: **not specified**

Connected Component Analysis

Thursday 18 January 2024 15:45 (45 minutes)

Session Classification: Lecture and Exercises

Contribution ID: **17** Type: **not specified**

Now you!

Thursday 18 January 2024 16:30 (30 minutes)

Work on and discuss the seven tasks on "Connected Component Analysis" in breakout rooms (to be continued tomorrow).

Session Classification: Lecture and Exercises

Contribution ID: **18** Type: **not specified**

Looking back

Friday 19 January 2024 13:00 (15 minutes)

Recapitulating yesterday's course content and discussing questions that may have appeared meanwhile.

Session Classification: Lecture and Exercises

Contribution ID: **19**   Type: **not specified**

Now you!

Friday 19 January 2024 13:15 (45 minutes)

Work on and discuss the seven tasks on "Connected Component Analysis" in breakout rooms (continued).

Session Classification: Lecture and Exercises

Contribution ID: **20**   Type: **not specified**

Community-developed checklists for publishing images and image analyses

Friday 19 January 2024 14:00 (45 minutes)

Do's and Don'ts in image processing: https://doi.org/10.1038/s41592-023-01987-9.

Session Classification: Lecture and Exercises

Contribution ID: **21**　　　　　　　　　　　　　　　　　　　Type: **not specified**

Capstone Challenge

Friday 19 January 2024 15:15 (1 hour)

Hands-on "Morphometrics".

Session Classification: Lecture and Exercises

Contribution ID: **22**   Type: **not specified**

Conclusions

Friday 19 January 2024 16:15 (45 minutes)

Concluding remarks and open discussion.

Session Classification: Lecture and Exercises