



Technical University of Lodz
Institute of Electronics

Algorithms and Data Structures


Canopy

Łódź 2013





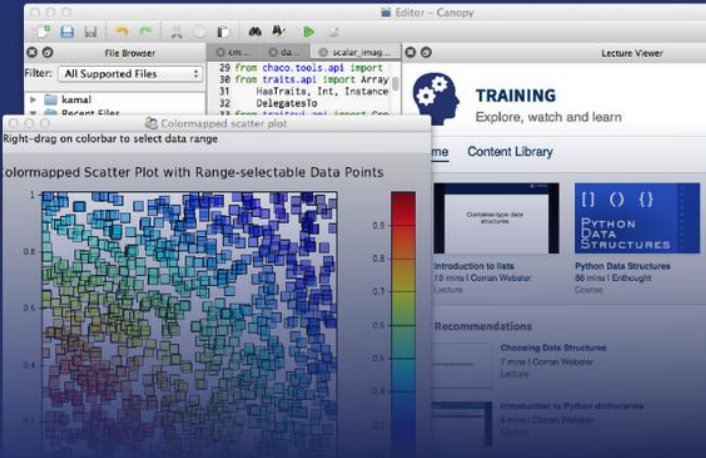
www.enthought.com




Log In | Create Account

PRODUCTS SERVICES COMPANY CONTACT


ENTHOUGHT CANOPY EPD






Data analysis and visualization. Python distribution with GUI. Integrated code editor and IPython console. Graphical package management. Integrated interactive training platform. Easy installation and deployment.


[Learn More](#)



Applied Python Training
Intensive courses for scientific analysis



Application Consulting
Rapid application development for the enterprise



Expert Support
Help from our Python and application gurus

M Kociński & A Materka, Algorithms & Data Structures, TUL IFE, Łódź 2013

2



Installation

Log In | Create Account

ENTHOUGHT
SCIENTIFIC COMPUTING SOLUTIONS

PRODUCTS
ENTHOUGHT CANOPY EPD

SERVICES COMPANY CONTACT

Canopy Overview Features Compare Subscriptions Academic License Canopy Package Index FAQ Export restrictions

Explore.
Develop.
Visualize.

Enthought Canopy is a comprehensive Python analysis environment with easy installation & updates of the proven Enthought Python distribution - all part of a robust platform you can explore, develop and visualize on.

Get Canopy

ENTHOUGHT
CANOPY

The big leap for your Python Environment.

See what's new in Canopy



Installation

The screenshot shows the Enthought Canopy Academic License page. At the top right, the 'Create Account' link is circled in red. The main heading is 'Enthought Canopy for Academic Use For Degree Granting Institutions'. Below this, a paragraph explains that Enthought offers free use of Canopy and EPD to students and staff at degree-granting institutions. Another paragraph states that an academic license allows users to update any Canopy package at any time. The section 'Request your Academic License' is circled in red, containing a green button labeled 'Request your Academic License'. The footer includes the Enthought logo and navigation links for PRODUCTS, SERVICES, COMPANY, and CONTACT.

Log In | **Create Account**

ENTHOUGHT
SCIENTIFIC COMPUTING SOLUTIONS

PRODUCTS
ENTHOUGHT CANOPY EPD

SERVICES COMPANY CONTACT

Canopy Overview Features Compare Subscriptions **Academic License** Canopy Package Index FAQ Export restrictions

Enthought Canopy for Academic Use

For Degree Granting Institutions

Enthought offers free use of Canopy and EPD to students and staff at degree-granting institutions, including high schools, undergraduate colleges and universities, and post-graduate degree programs. See [academic license](#) terms for details. Staff at non-degree-issuing research institutions, please purchase a [Canopy Basic subscription](#) or download [Canopy Express](#).

An academic license allows you to update any Canopy package at any time, to easily install packages from Canopy's PyPI mirror repository, and to access our library of webinars.

Request your Academic License

You can request an academic license below. **Using your academic email address**, you will need to [sign up](#) for a free Enthought account, or [sign in](#) to your existing Enthought account.

Request your Academic License

/ Products / Enthought Canopy / Academic License [SITEMAP](#)

ENTHOUGHT PRODUCTS SERVICES COMPANY CONTACT



Installation

[Log In](#) | [Create Account](#)



PRODUCTS

SERVICES

COMPANY

CONTACT

➡ Enter your Enthought account

Sign in or sign up

E-mail



Password



➡ Sign in

[Forgot password](#)

Don't have an account?

➡ Sign up



Installation

ENTHOUGHT
SCIENTIFIC COMPUTING SOLUTIONS

PRODUCTS
ENTHOUGHT CANOPY EPD

SERVICES

COMPANY

CONTACT

marek.kocinski@p.lodz.pl | [Sign out](#)

[Canopy Overview](#) [Features](#) [Compare Subscriptions](#) [Academic License](#) [Canopy Package Index](#) [FAQ](#) [Export restrictions](#)

Enthought Canopy for Academic Use

For Degree Granting Institutions

Enthought offers free use of Canopy and EPD to students and staff at degree-granting institutions, including high schools, undergraduate colleges and universities, and post-graduate degree programs. See [academic license](#) terms for details. Staff at non-degree-issuing research institutions, please purchase a [Canopy Basic subscription](#) or download [Canopy Express](#).

An academic license allows you to update any Canopy package at any time, to easily install packages from Canopy's PyPI mirror repository, and to access our library of webinars.

Request your Academic License

You can request an [academic license](#) below. **Using your academic email address**, you will need to [sign up](#) for a free Enthought account, or [sign in](#) to your existing Enthought account.

You have an academic license already!

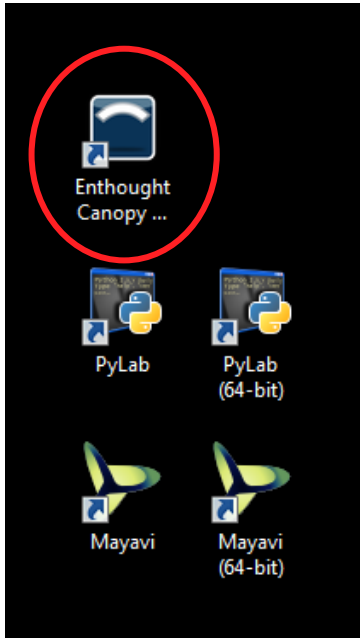
marek.kocinski@p.lodz.pl has an active Academic License.

You can now download Enthought Canopy. Logging in as **marek.kocinski@p.lodz.pl** within Canopy will give you access to all features available under Academic License.

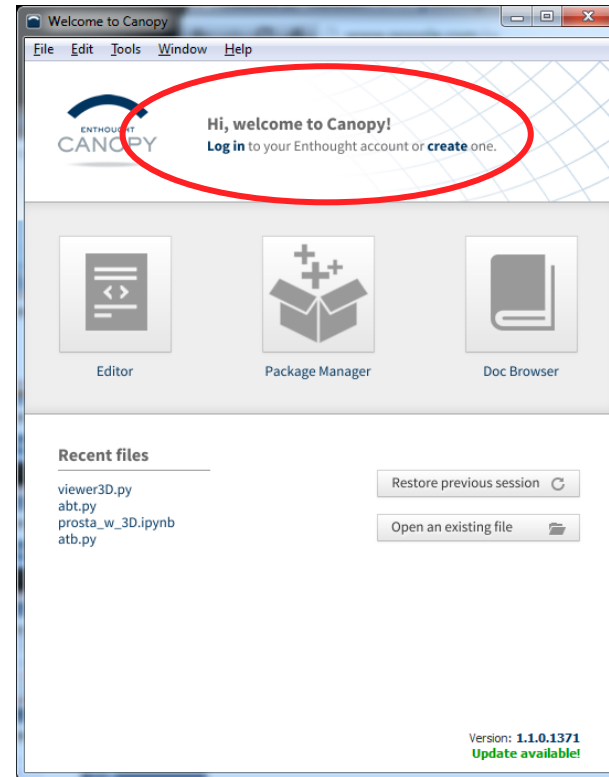
Not **marek.kocinski@p.lodz.pl**? [Sign in as a different user.](#)



Canopy



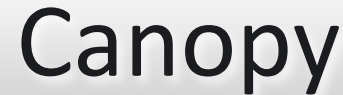
Desktop shortcuts



Canopy's main window

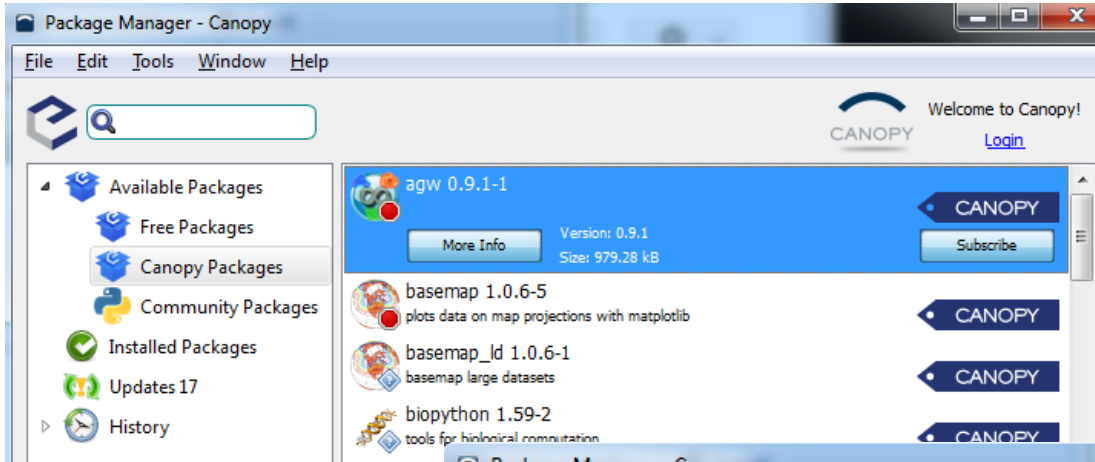
Webinar about Canopy:

["Why We Built Enthought Canopy, An Inside Look" Recorded Webinar](#)

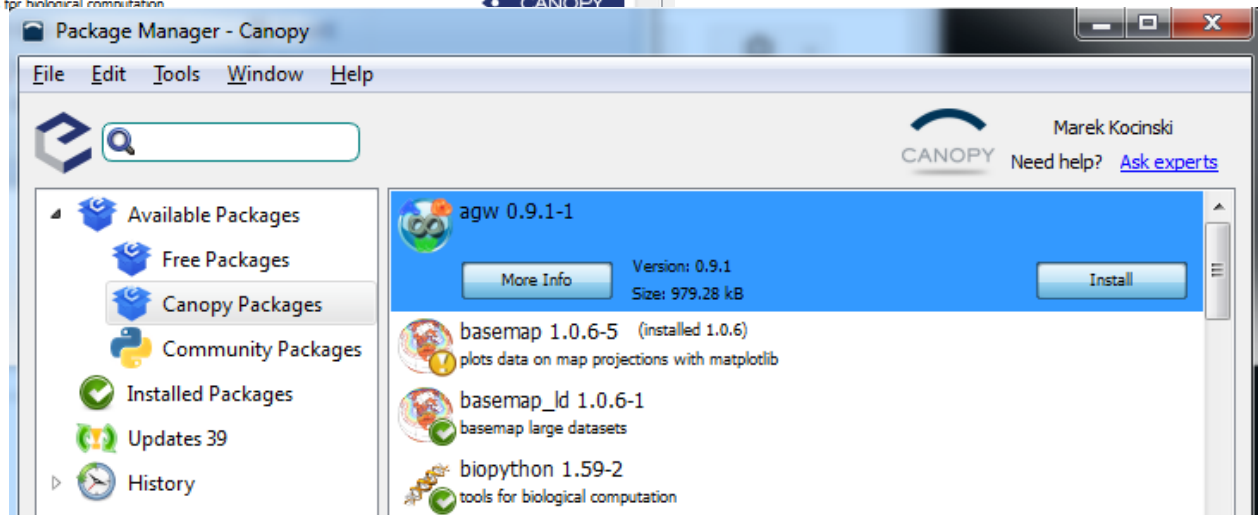




Canopy – Additional Packages



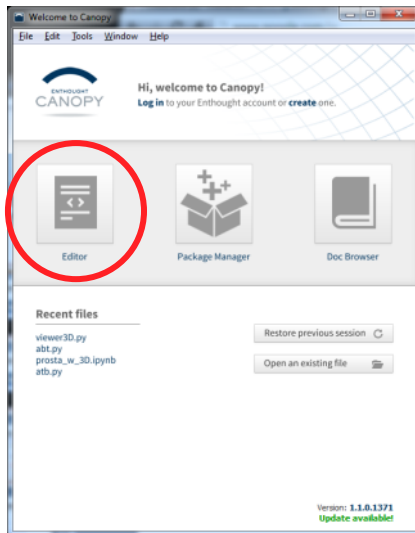
Accessibility of Canopy's packages





Let's Start...

Enthought
Canopy ...



```
1 """ Mixin to make Component classes adhere to the Enamifactory
2 interface.
3
4 This was stolen directly from the PivotGrid project. Eventually this sort
5 of thing will be part of Enam. Until then... This.
6 """
7
8 from enaml.core.toolkit import Toolkit
9 from enaml.core.BaseComponent import BaseComponent
10
11
12 class NeighborLockupMixin(object):
13     """ Mixin to provide an Enamifactory interface for BaseComponent
14     subclasses.
15
16     Note that the classes themselves obey the interface, not instances
17     of them.
18
19     The semantics are as follows:
20
21     * Find the current toolkit's prefixes, i.e. for the Qt
22       implementation of the Foo component, the toolkit
23       implementation will be the Qt toolkit, not the Foo one and then
24       ...
25 """
26
27 In [11]: 4095+4095*14
28 Out[11]: 234881824
29
30 In [12]: 4095+4095*14*2
31 Out[12]: 469762048
32
33 In [13]: 8192**2+4
34 Out[13]: 268435456
35
36 In [14]: 8192**2*2+4
37 Out[14]: 536870912
38
39 In [15]: 100000/200.
40 Out[15]: 500.0
41
42 In [16]:
```

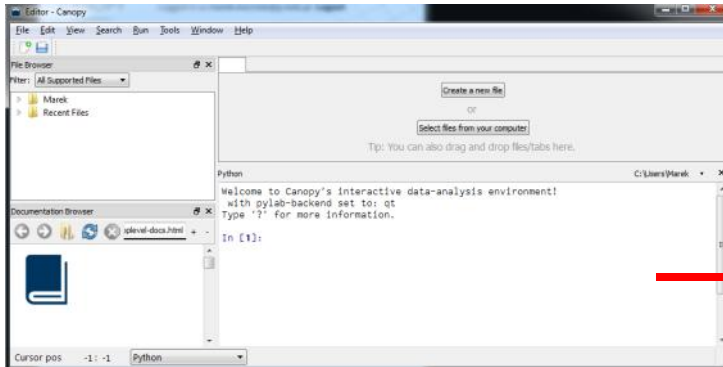
Advanced
Editor

IPython
Command
Line

Interactive Python (www.ipython.org)



IPython Command Line

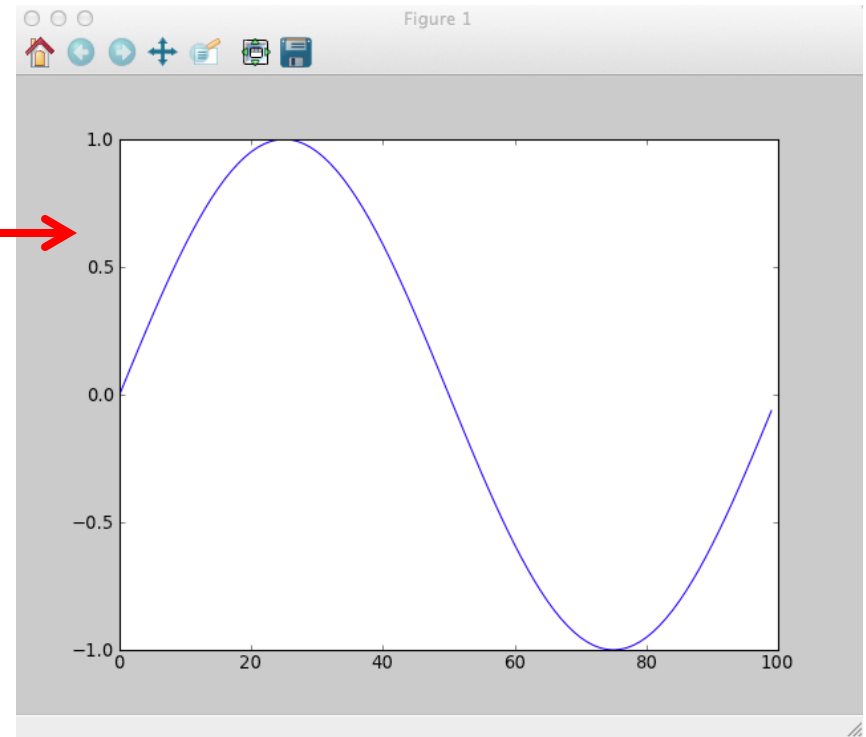


```
x = arange(100.)  
y1 = sin(x*pi/50)  
y2 = cos(x*pi/50)
```

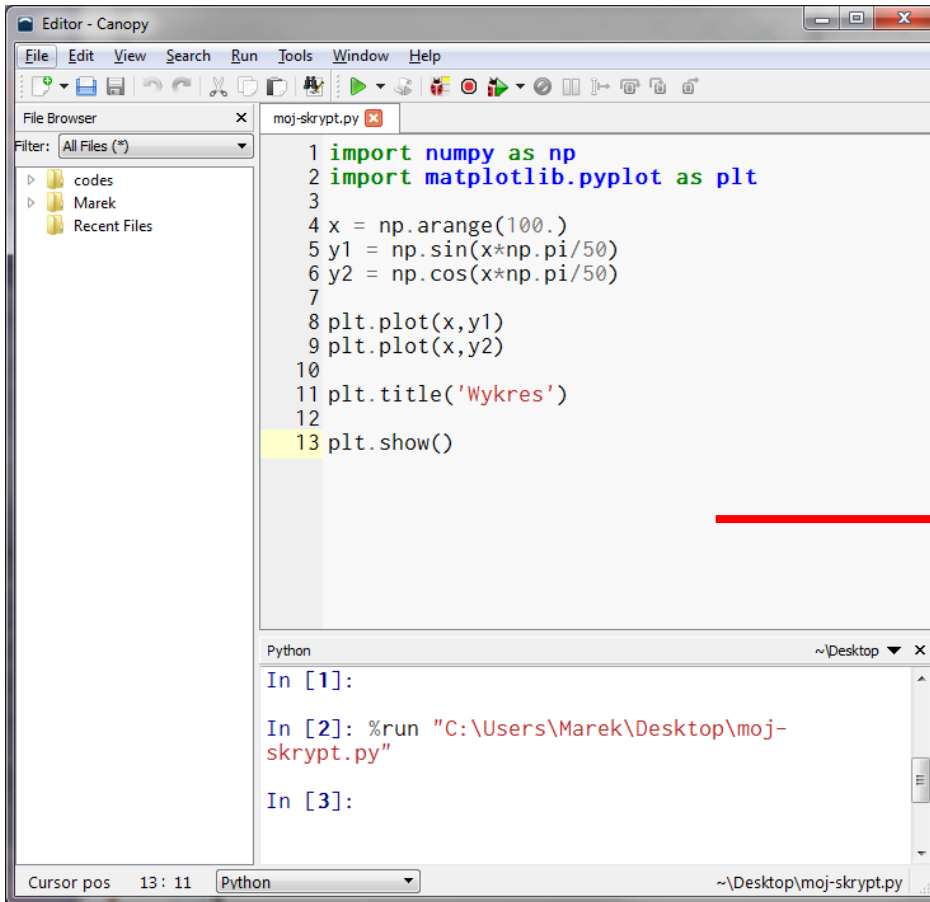
```
plot(x,y1)  
plot(x,y2)
```

#or

```
figure(2)  
plot(x,y1,x,y2)  
title(' sinus and cosinus')
```



Advanced Editor – First Script



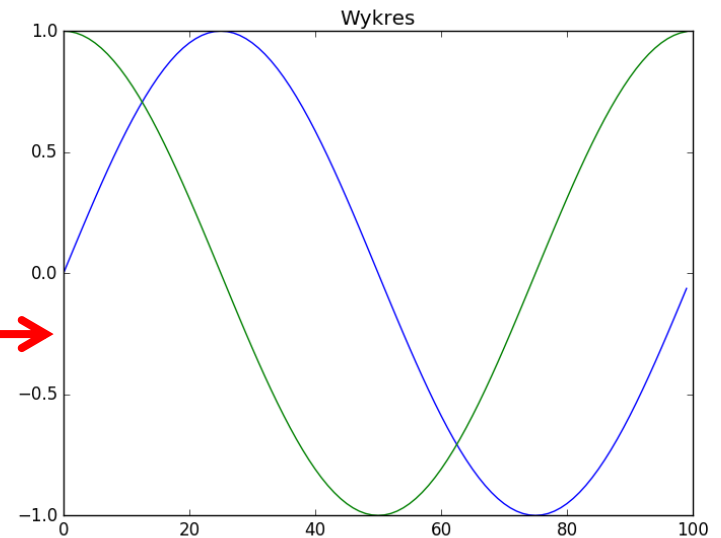
The screenshot shows the Canopy IDE editor window. The main text area contains the following Python code:

```
1 import numpy as np
2 import matplotlib.pyplot as plt
3
4 x = np.arange(100.)
5 y1 = np.sin(x*np.pi/50)
6 y2 = np.cos(x*np.pi/50)
7
8 plt.plot(x,y1)
9 plt.plot(x,y2)
10
11 plt.title('Wykres')
12
13 plt.show()
```

The left sidebar shows a file browser with a tree view containing 'codes', 'Marek', and 'Recent Files'. The bottom panel shows the Python interpreter output:

```
In [1]:
In [2]: %run "C:\Users\Marek\Desktop\moj-skrypt.py"
In [3]:
```

A red arrow points from the 'plt.show()' line in the code editor to the plot on the right.





IPython Command Line

```
from scipy.misc import ascent
```

```
image = ascent()
```

```
imshow(image)
```

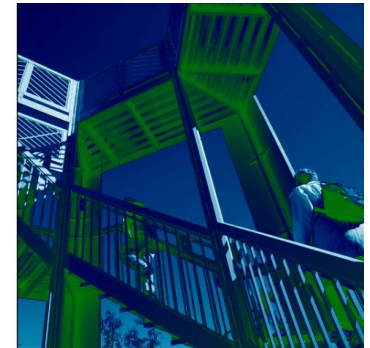
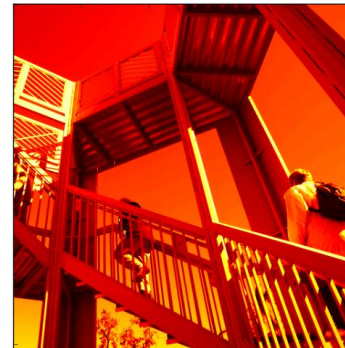
```
imshow(image, cmap='gray')
```

```
imshow(image, cmap='hot')
```

```
imshow(image, cmap='ocean')
```

```
imshow(image[:,::-1],cmap='gray') # flip l-r
```

```
imshow(image[:,::-1],cmap='gray') # flip u-d
```





Directory Navigation in IPython

Get path to current working directory

pwd

u'C:\\Users\\Student'

Change directory (note Unix style forward slashes)

cd d:/

pwd

u'd:\\'

make a directory (note Unix style forward slashes)

name it: **Algorithms**

mkdir Algorithms

go inside this directory

cd Algorithms

pwd



Download an Image

<http://www.eletel.p.lodz.pl/pl/> -> O Instytucie -> Pracownicy -> Marek Kociński -> Dla Studentów -> Algorithms And Data Structures

<http://www.eletel.p.lodz.pl/eng/> -> Staff Members -> Marek Kociński -> Dla Studentów -> Algorithms And Data Structures

ZAKŁAD ELEKTRONIKI MEDYCZNEJ
Elektronika – Twoją pasją!

Kontakt

MENU GŁÓWNE

- Start
- Badania i nauka
- Dydaktyka
- Studenckie staże zagraniczne
- Usługi
- Seminaria ZEM
- Wydarzenia
- Pracownicy
- Doktoranci
- Kontakt
- Szukaj

ZEM
ZAKŁAD ELEKTRONIKI MEDYCZNEJ
STRONY PRACOWNIKÓW

Start > Marek Kociński > Dla Studentów > Algorithms and Data Structures

Filtruj Szukaj Resetuj

M.Kociński - Algorithms and Data Structures

Biomedical Engineering IFE Students sem. 1

Lecture

[2012 Lecture](#)

Plik	Wersja	Rozmiar	Pobrano
1.Introduction	2013 Oct 13, 2013	4.8 MB	Download 0
2. Canopy - additional image	2013 Oct 13, 2013	143.74 KB	Download 0

For DOWNLOAD is used JotLoader component © V. Kanich 2007-2009

ELEKTRONIKA MEDYCZNA - NIEZASTĄPIONA W DIAGNOSTYCE, LECZENIU I REHABILITACJI

- systemy wspomagające osoby niepełnosprawne
- b-link
- programowanie urządzeń mobilnych
- systemy sztucznej inteligencji

Trzeba biec z całych sił by pozostać w tym samym miejscu. Żeby poruszać się do przodu, trzeba biec dwa razy szybciej.

L. Carroll, "Przygody Alicji w Krainie Czarów"

Download an image:
Canopy – additional image
and save it inside the folder
AandDS12 or AandDS16



Load the Image

Check the content of the AandDS12 folder

brain1.bmp image should be inside

ls

Load and show the image from a disc file

my_image = imread('brain1.bmp')

imshow(my_image)

my_image.shape

change colormaps

imshow(my_image, cmap=plt.cm.gray)

imshow(my_image, cmap=plt.cm.spectral)

imshow(my_image, cmap=plt.cm.jet)

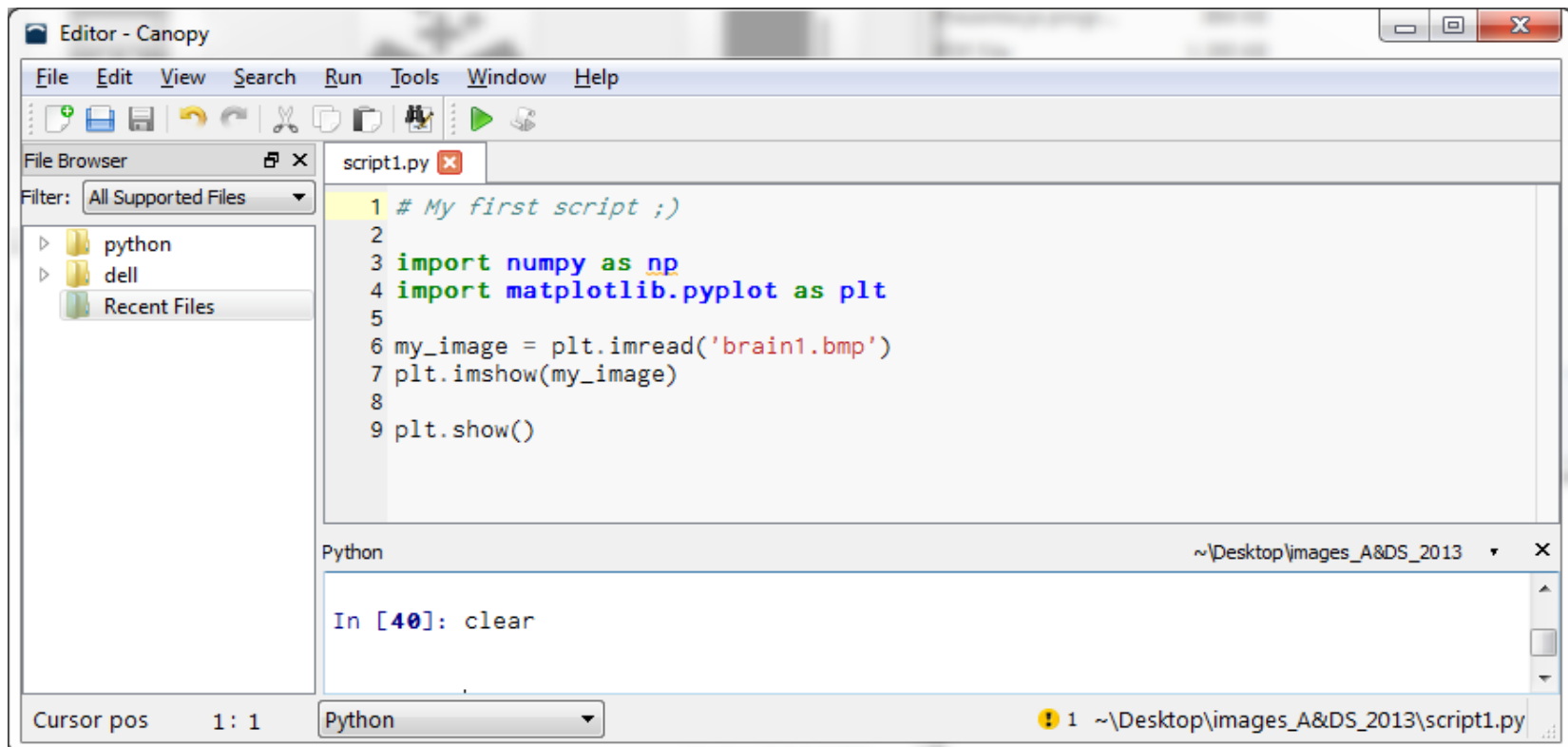
display part of the image

imshow(my_image[80:250,200:400])



Advanced Editor – Second Script

1. Create a new file and type in the program
2. Save it in your working folder (AadnDS12) as **script1.py**
3. Run the script (ctrl+R)





Exercises

1. Watch webinar about Canopy:

[“Why We Built Enthought Canopy, An Inside Look” Recorded Webinar](#)

2. Read lecture IPython 2012 :

Start ▶ Marek Kociński ▶ Dla Studentów ▶ Algorithms and Data Structures

Filtruj

Szukać

Resetuj

M.Kociński - Algorithms and Data Structures

Biomedical Engineering IFE Students sem. 1

Lecture

[2012 Lecture](#)

**ELEKTRONIKA
MEDYCZNA -
NIEZASTĄPIONA W
DIAGNOSTYCE,
LECZENIU I
REHABILITACJI**

■ [systemy wspomagające
osoby niepełnosprawne](#)

■ [b-link](#)

■ programowanie
urządzeń mobilnych