



**SIBA**  
**CAMPUS**

# Digital Image Processing

IT 254  
Practical

Initial Discussion

Lecturer: Ms. Dinusha Premasiri



# Initial Discussion

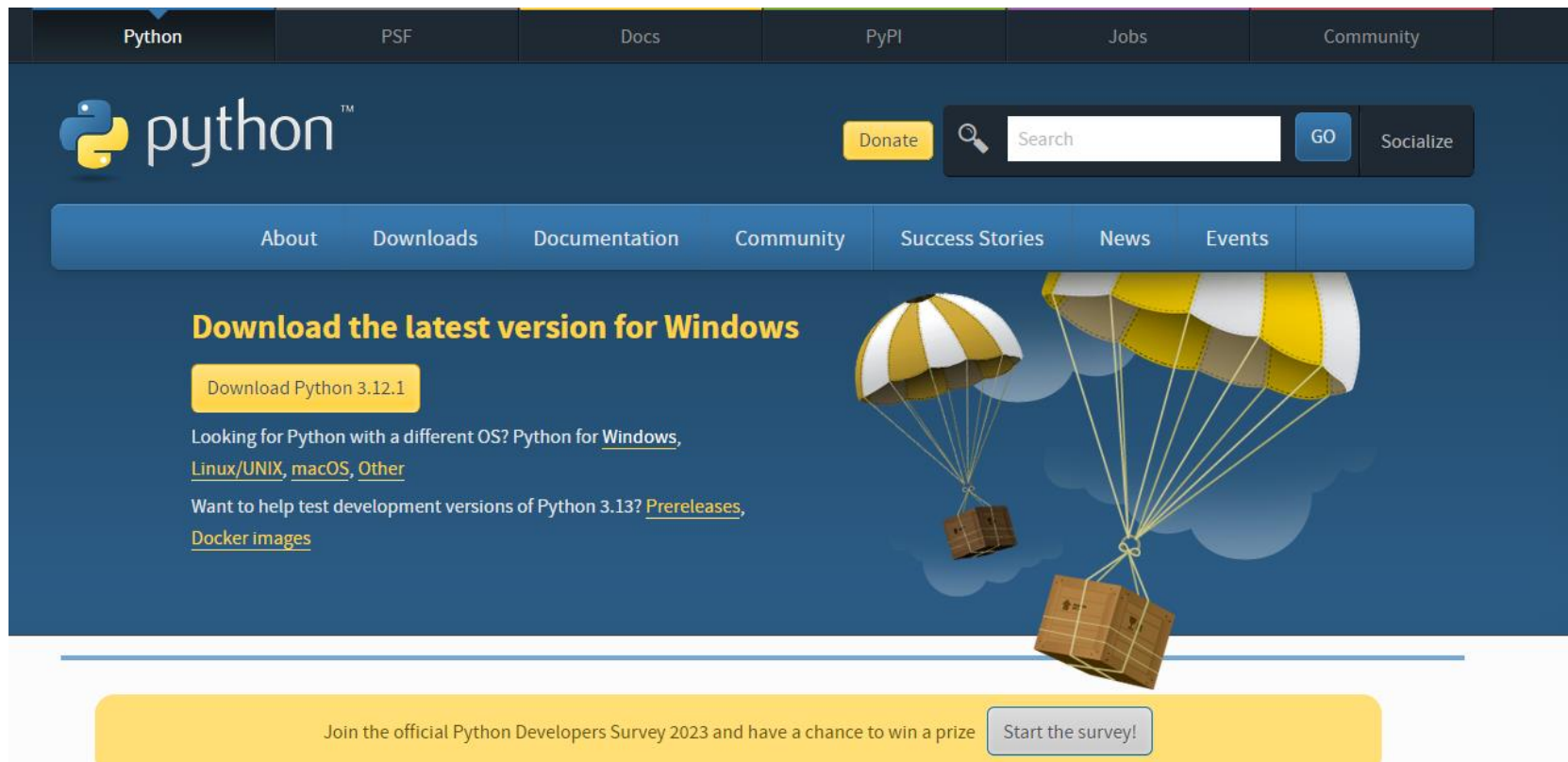
- Discuss the content that will be covered in practical classes
- Installing Python, Anaconda, and OpenCV – How to Install?
- About the projects and topics

# Need to prepare the following before Day 01:

- Download and install Python
- Download and Install Anaconda
- Install OpenCV in Anaconda
- Refresh your memory on the following:
  - Basic Python
  - Input / Output
  - Operators
  - Data Types

# Download and install Python

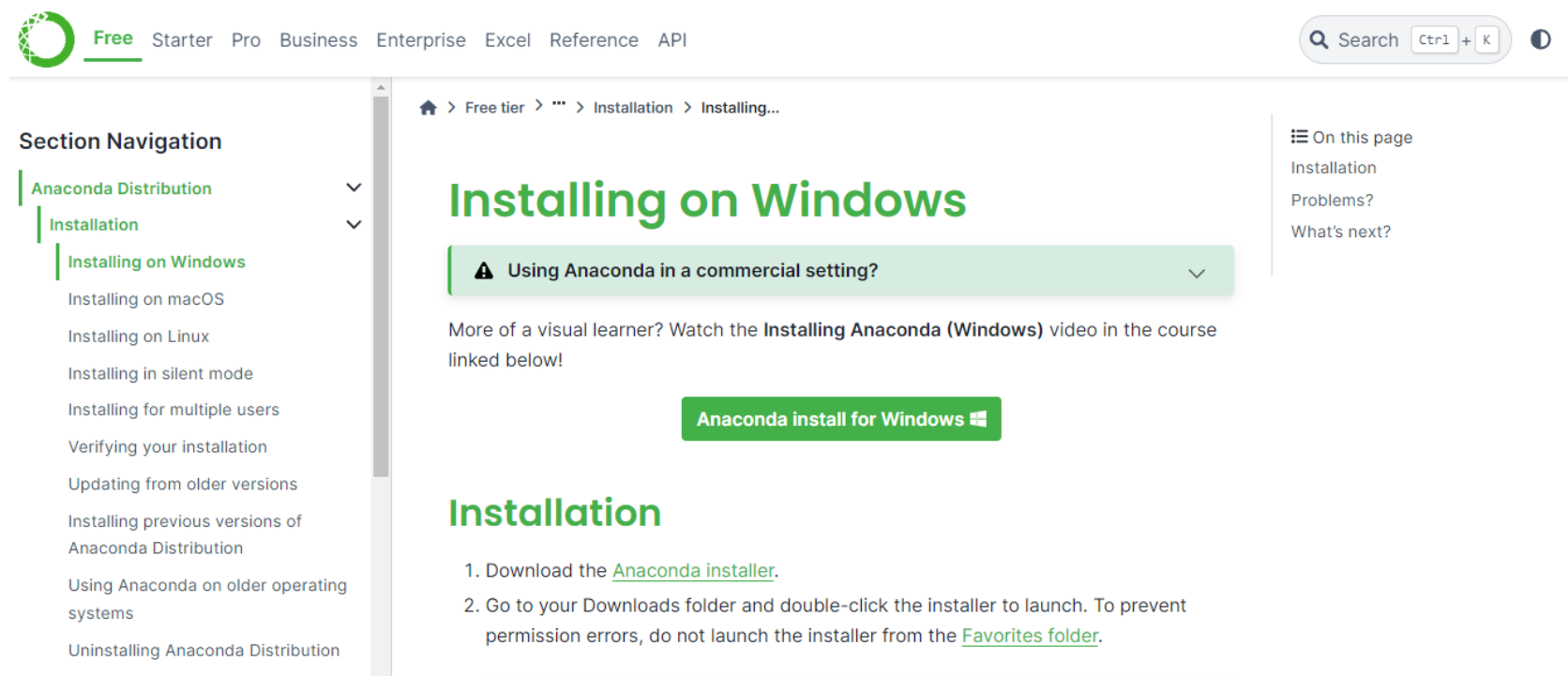
- Download Python : <https://www.python.org/downloads/>



# Download Anaconda

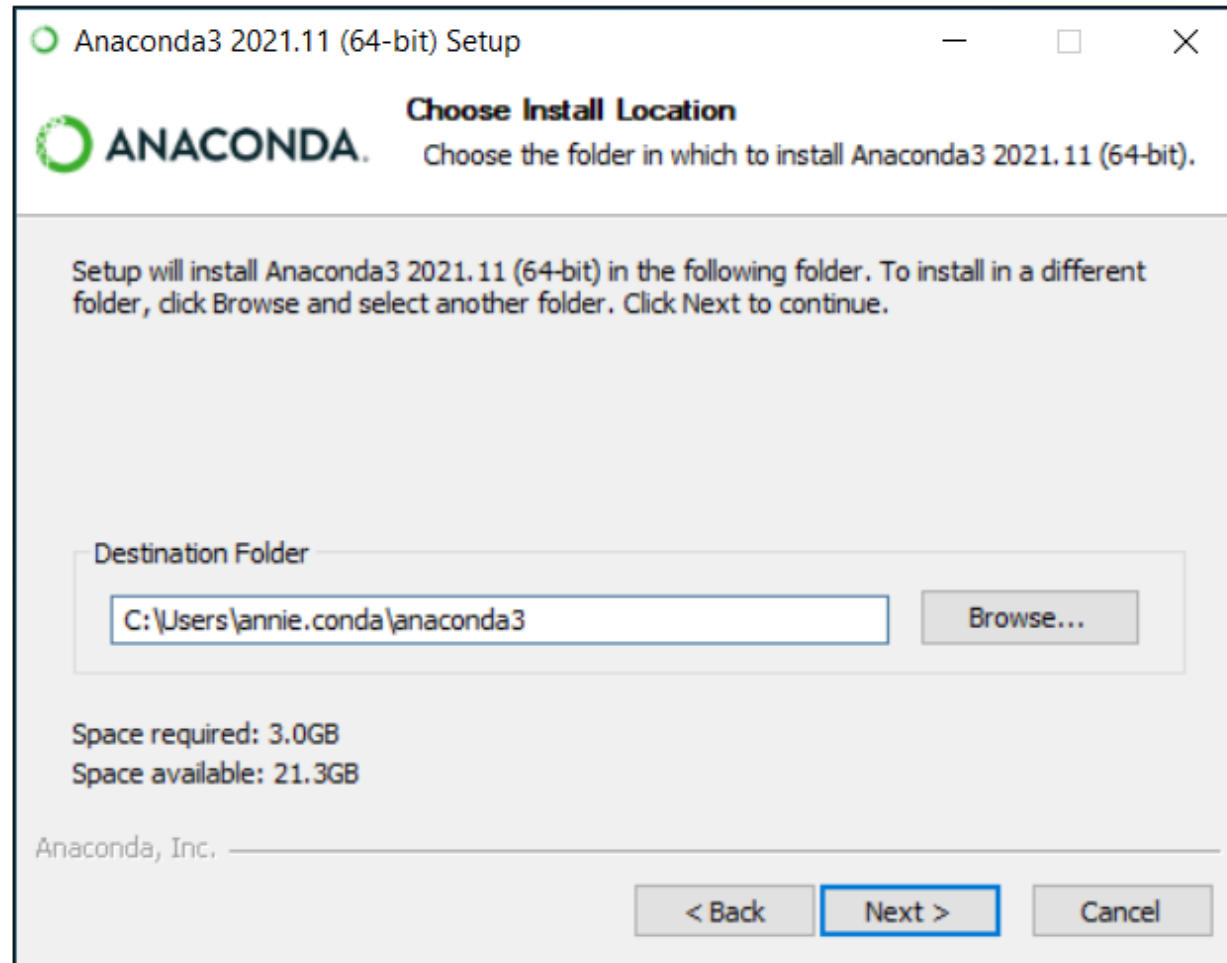
- Download Anaconda:

<https://docs.anaconda.com/free/anaconda/install/windows/>



The screenshot shows the Anaconda documentation website. The top navigation bar includes the Anaconda logo, a 'Free' badge, and links for Starter, Pro, Business, Enterprise, Excel, Reference, and API. A search bar is on the right. The left sidebar shows a 'Section Navigation' menu with 'Anaconda Distribution' expanded, showing 'Installation' and 'Installing on Windows' as sub-items. The main content area is titled 'Installing on Windows' and includes a warning box about commercial settings, a video recommendation, and a green button labeled 'Anaconda install for Windows'. Below this is an 'Installation' section with two numbered steps: 1. Download the [Anaconda installer](#). 2. Go to your Downloads folder and double-click the installer to launch. To prevent permission errors, do not launch the installer from the [Favorites folder](#).

# Install Anaconda

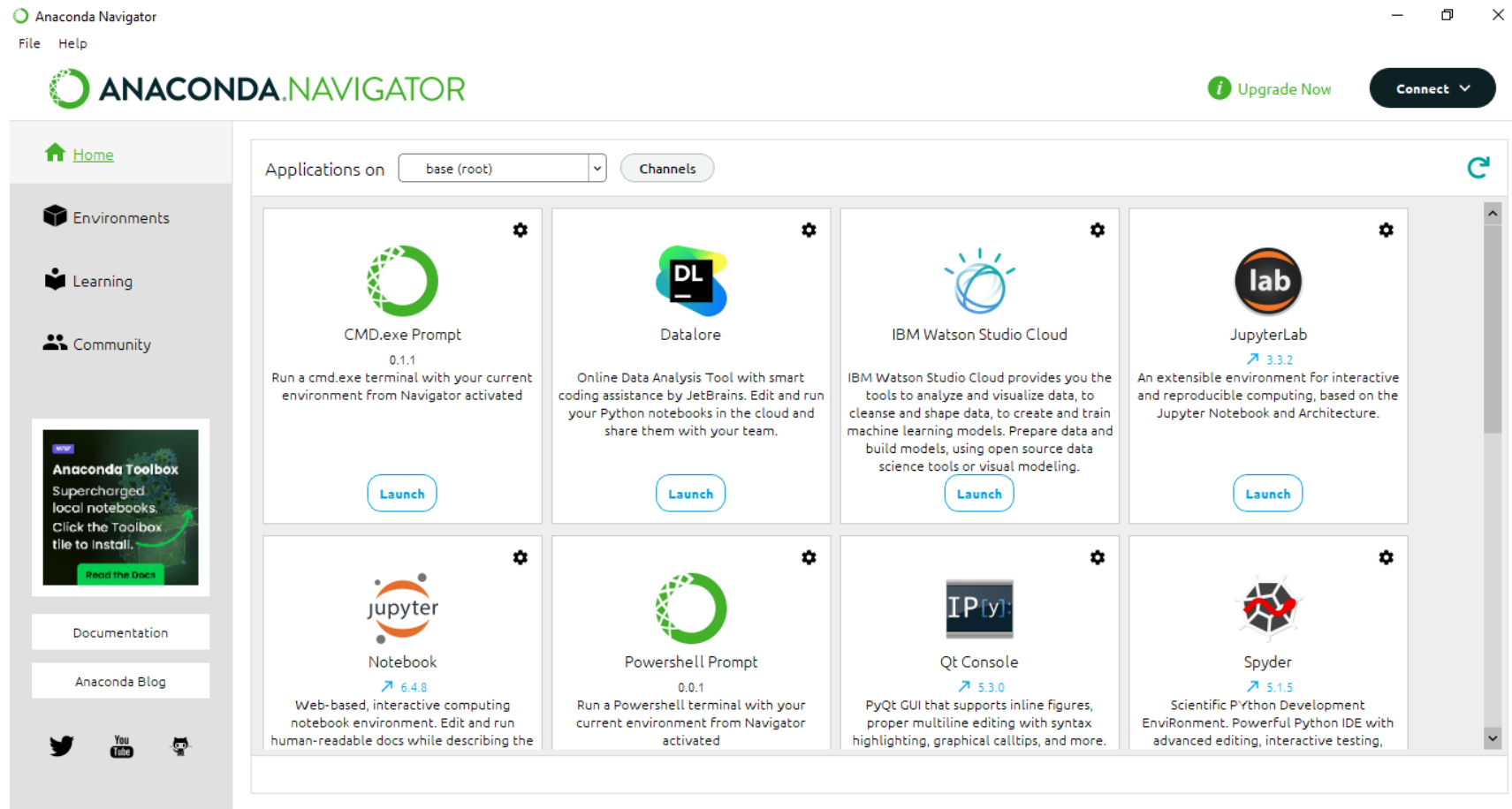


# Anaconda Environment

Creating Anaconda Environment :

- Step 1:- Search Anaconda in your taskbar and select ANACONDA NAVIGATOR.
- Step 2:- Now you will see a menu with various options like Jupiter notebook , Spyder etc. This is Anaconda Environment.
- Step 3:- Select Spyder as it is Anaconda's IDE for python and OpenCV library will work in it.

# Anaconda Environment







# Install OpenCV in Anaconda

- Step 1:- After installing the anaconda open the Anaconda Prompt.
- Step 2:- Type the given command, press enter, and let it download the whole package.

Command :

```
conda install -c menpo opencv
```

- Step 3:- Now simply import OpenCV in your python program in which you want to use image processing functions.

# Session 01: Introduction to Python

- Functions
- Data Structures
  - Lists
  - Dictionaries
  - Tuple
  - Set
  - String
  - Byte Array
- Object Oriented Programming Concepts
- Exception Handling \*
- File Handling \*

# Need to prepare the following before Day 02:

- Getting Started with OpenCV
- Installing OpenCV in Anaconda

# Session 02: Image Processing Part I

- Reading/ Displaying/Writing/ Saving an image
- Color space
- Arithmetic operations on an image
- Bitwise operations on image
- Image Resizing \*
- Eroding/ Blurring
- Border around an image
- Gray scaling \*
- Scaling/ Rotating/ Shifting and Edge Detection \*
- Erosion/ Dilation of an image \*

# Session 03: Image Processing Part II

- Analyzing an image using histogram
- Thresholding
- Segmentation
- Convert color space of an image
- Filter Color
- Bilateral filtering \*
- Image registration
- Background subtraction \*
- Foreground Extraction \*

# Session 04: Feature Detection

- Line Detection \*
- Circle Detection \*
- Detecting Corners of an image \*
- Detecting Circles and Ellipses in an image \*
- Document field detection \*
- Smile detection \*

# Session 05: Drawing Functions, Video Processing

- Draw a line/ circle/ ellipse/ rectangle
- Drawing a text string
- Find and draw contours \*
- Triangle with centroid
- Playing a video \*
- Creating a video using multiple images \*
- Extract images form video \*

# Simple OpenCV Project Ideas

- License Plate Recognition
- Hand Gesture Recognition
- Handwriting Recognition
- Plant Disease Identification
- Kidney Stone Identification
- Signature Verification
- Sign Language Detection



# Thank You!