

CA2.1.

Python para

Análisis de

Datos



Bienvenidos a un viaje con Python.



En este curso queremos que:

- Juguéis con Python.
- Impregnaros de su simplicidad, elegancia y versatilidad.
- Daros una idea de las posibilidades de este lenguaje de programación.
- Os ayude en vuestro crecimiento, tanto para uso personal como profesional.
- Y que os lo paséis bien.

Bienvenidos a un viaje con Python.



“Everyone in this country should learn how to program because it teaches you how to think” - Steve Jobs

Bienvenidos a un viaje con Python.



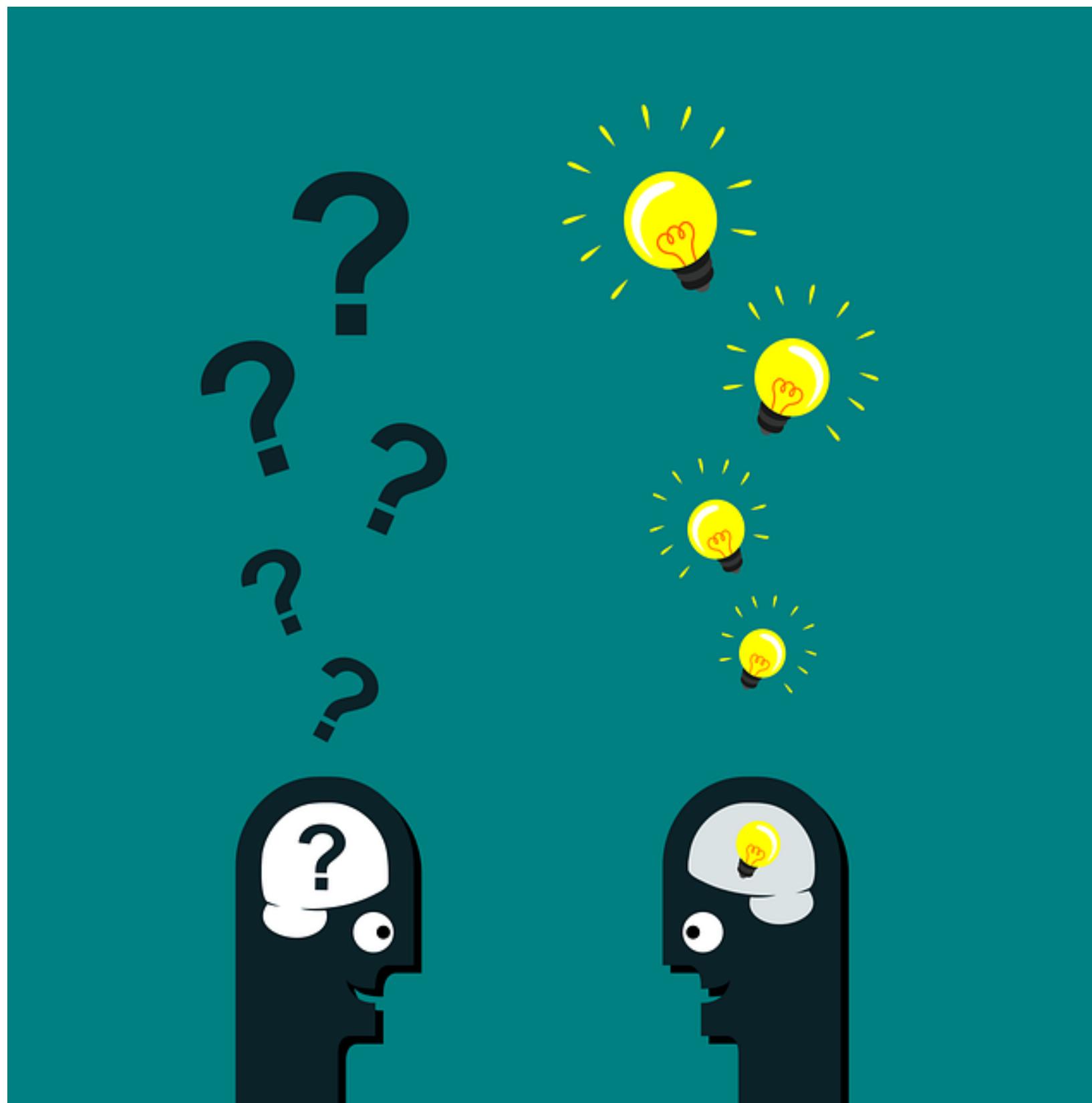
“Everyone in this country should learn how to program because it teaches you how to think” - Steve Jobs

“Any fool can write code that a computer can understand. Good programmers write code that humans can understand.” – Martin Fowler

Let's talk about you



Suposiciones y objetivos

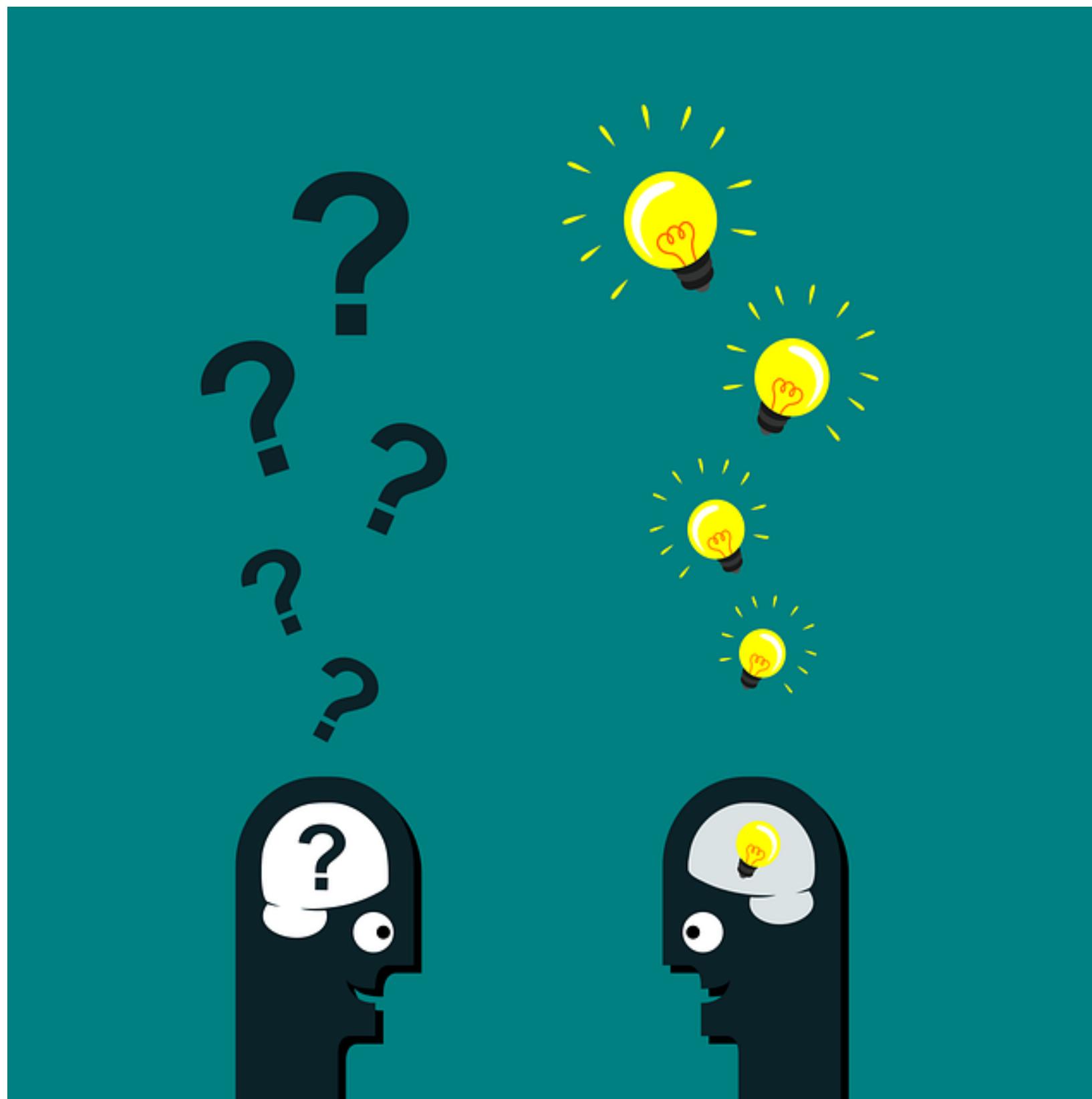


Al empezar:

- * sabéis algo de programación
- * estadística básica

c

Suposiciones y objetivos



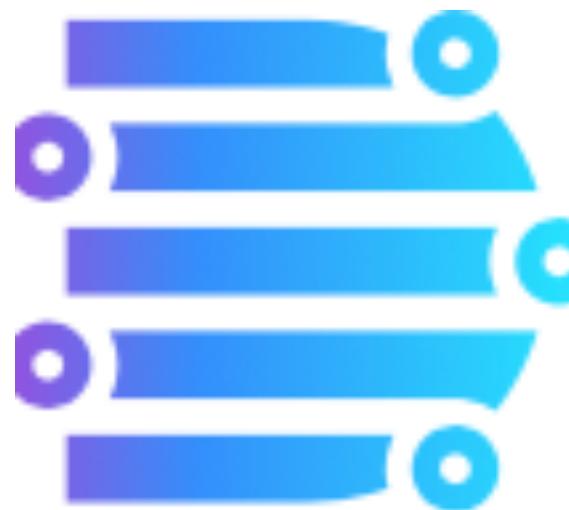
Al empezar:

- * sabéis algo de programación
- * estadística básica

Al acabar:

- * Conocimientos básicos de Python para seguir aprendiendo
- * Conoceréis los paquetes básicos para análisis de datos
- * Poder usar Python en vuestro día a día

Profesores



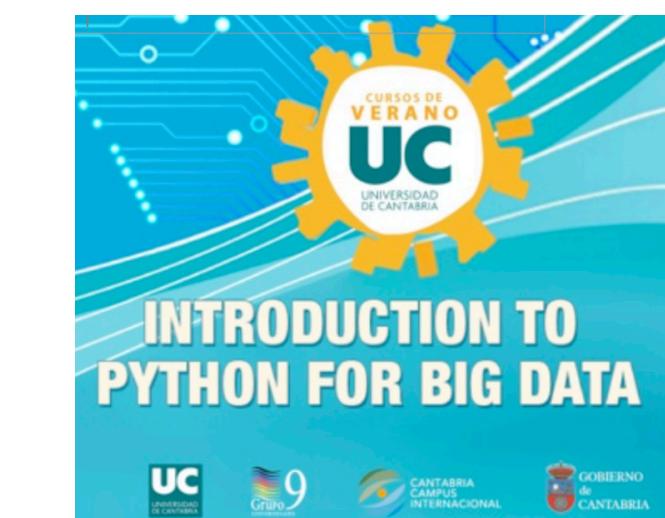
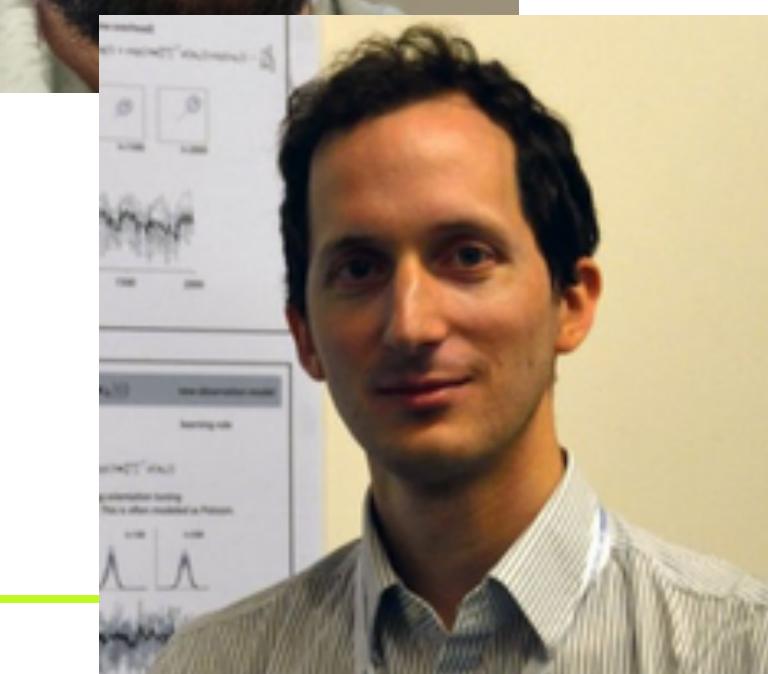
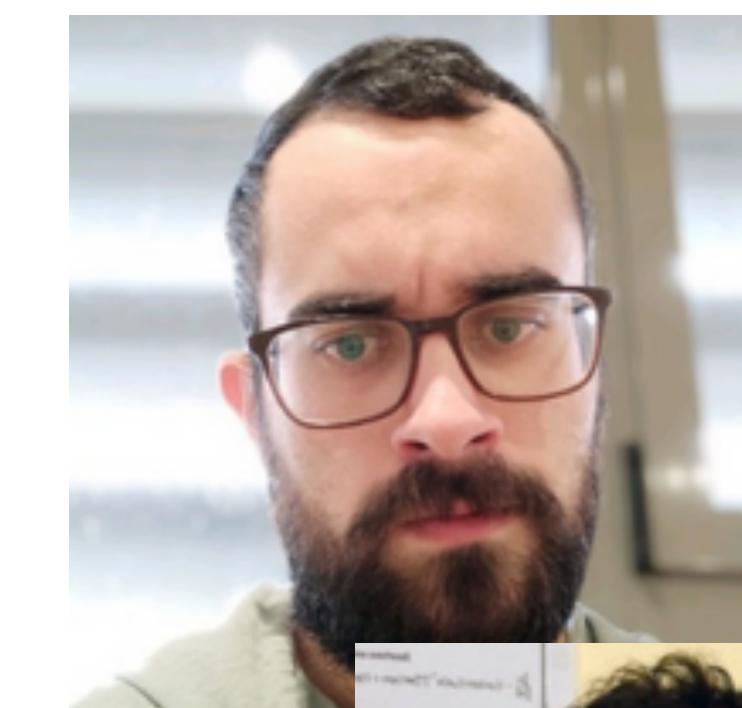
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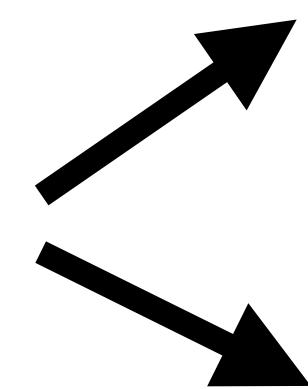
cristian.quintana@alumnos.unican.es



2017-2022

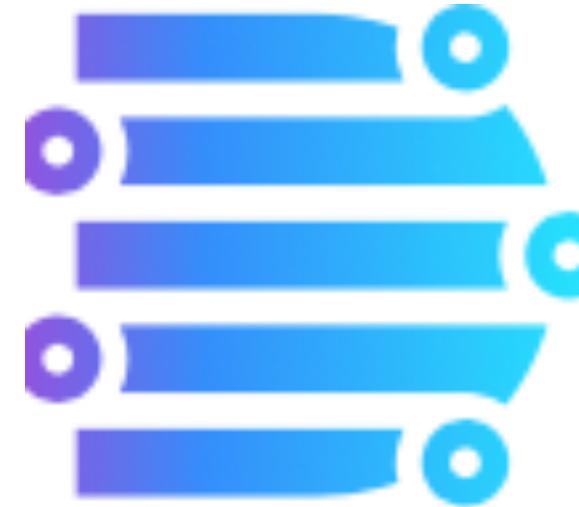
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Python para



Deep into

Profesores



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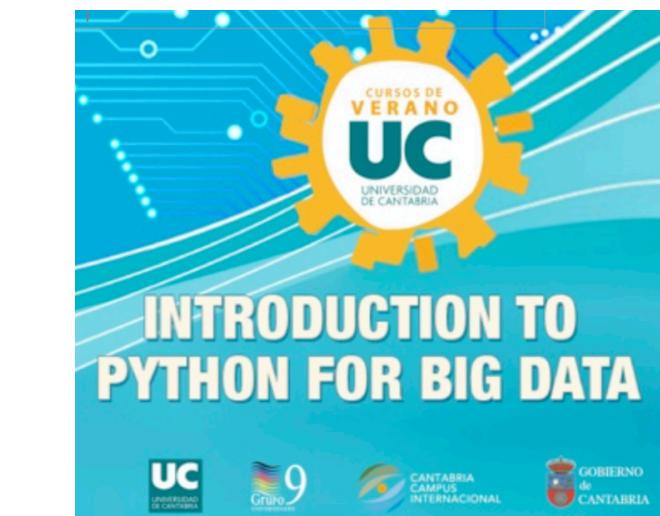
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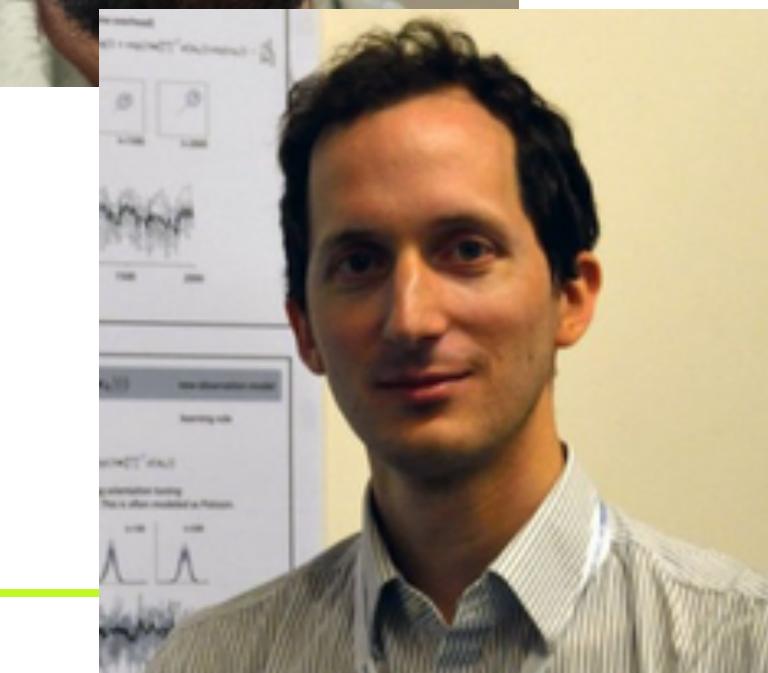
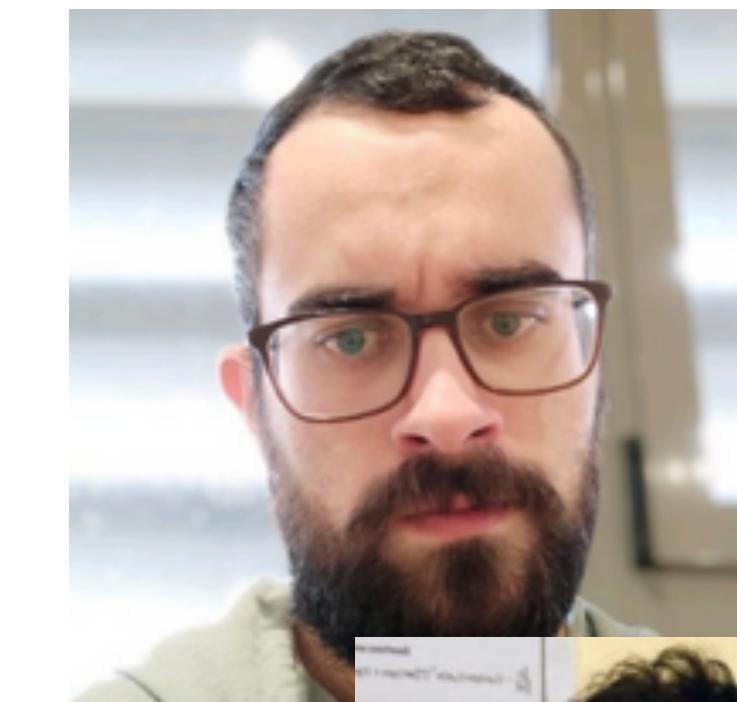
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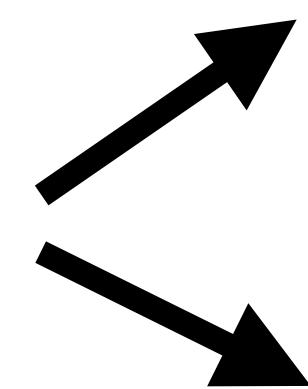


Intro Python



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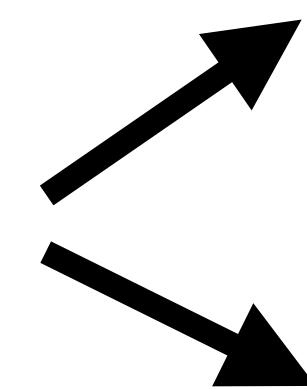
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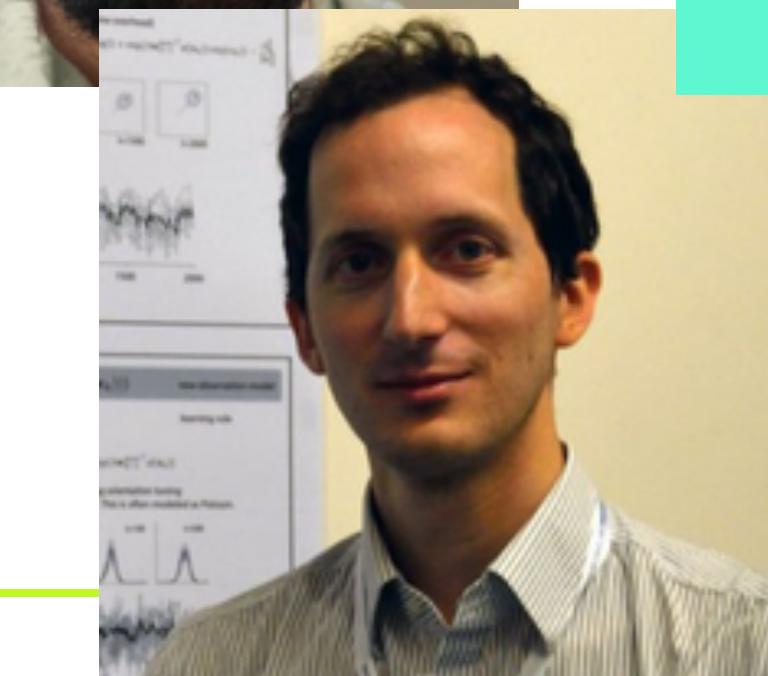
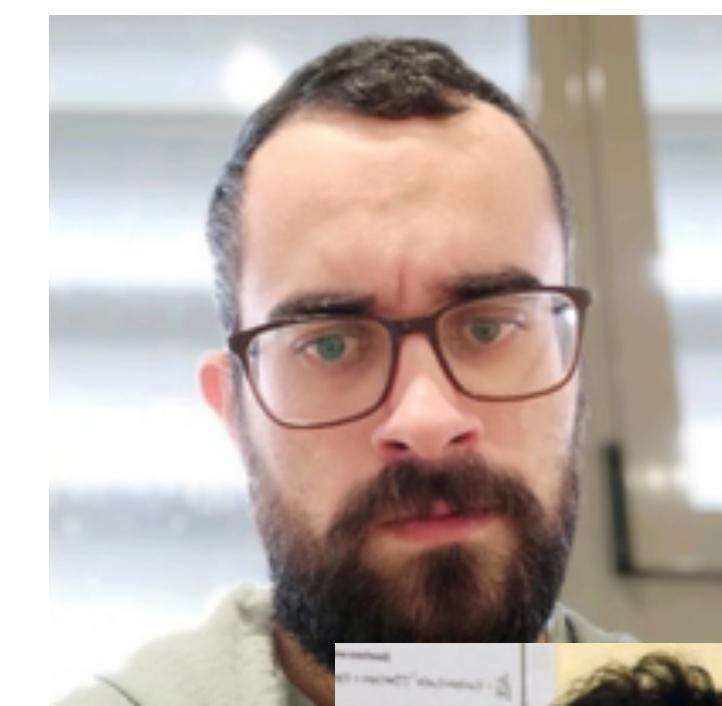
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Python para



Deep into

Intro Python



Librerías y
herramientas
proyectos data
analyses

Profesores



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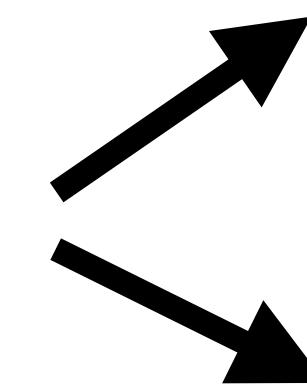
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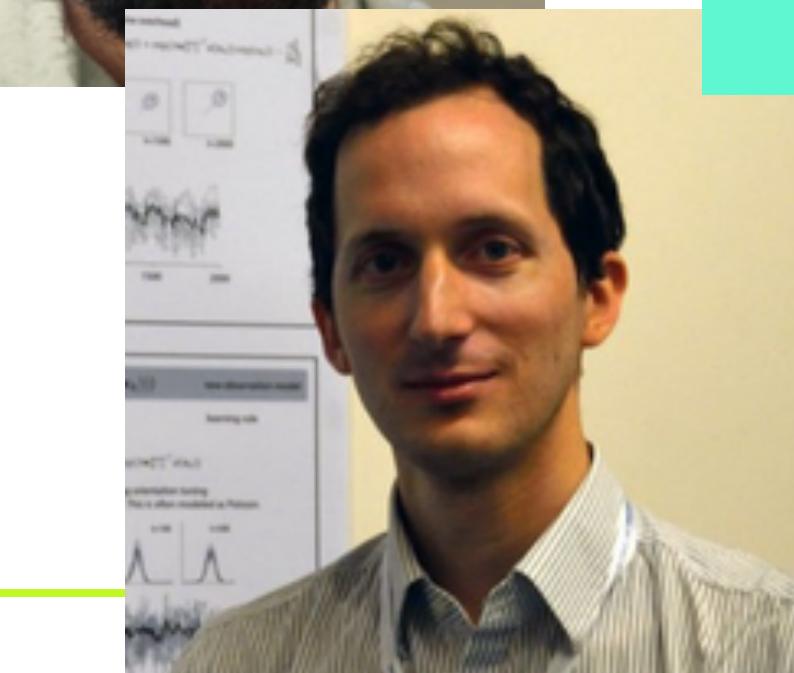
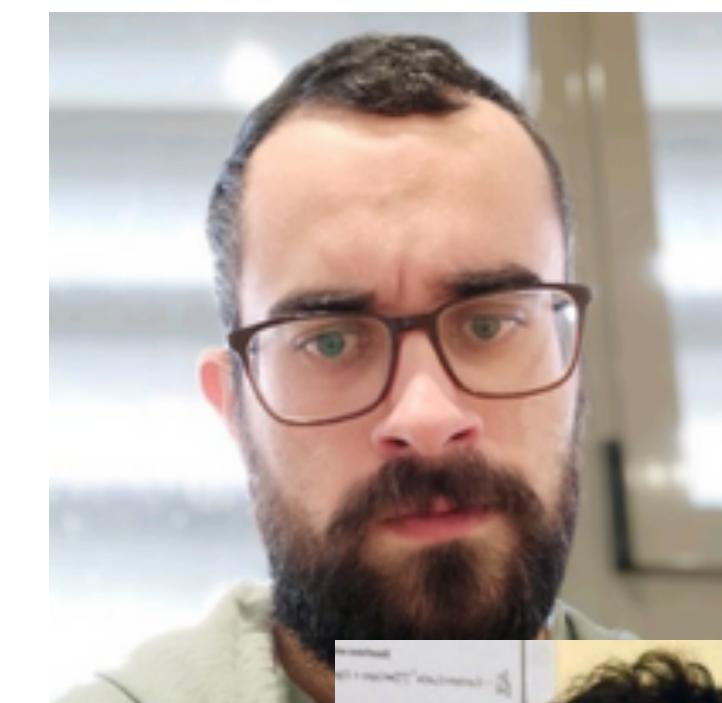
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Python para



Deep into

Intro Python



Librerías y
herramientas
proyectos data
analyses

Visualización
Web scraping

Profesores



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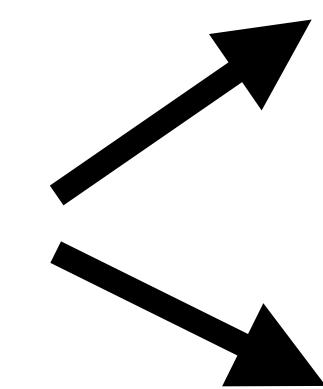
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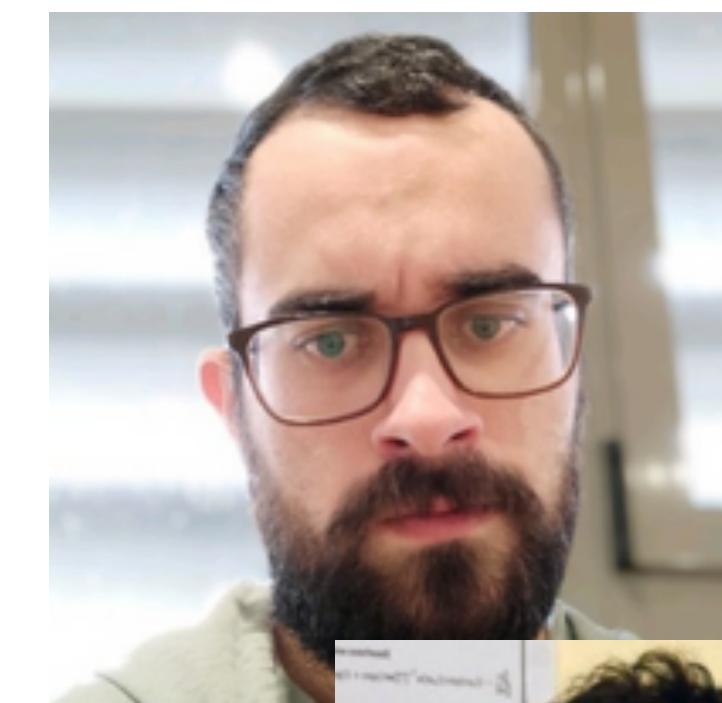
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Python para

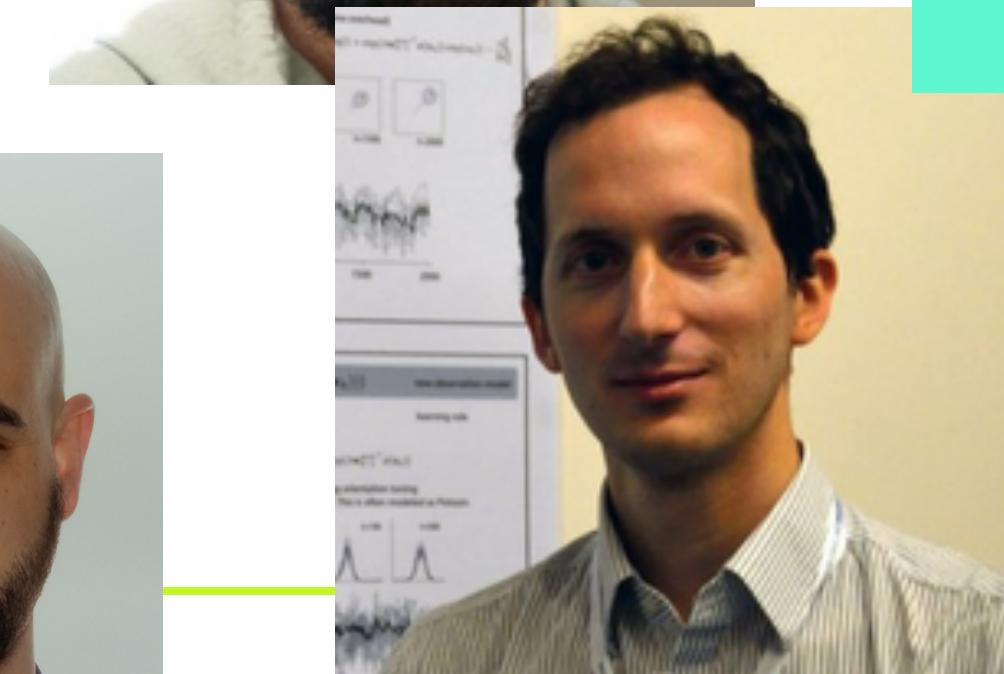


Deep into

Intro Python



Librerías y
herramientas
proyectos data
analyses



Aplicaciones Web



Visualización
Web scraping

Funcionamiento



- Mucha práctica
- Podéis interrumpir
- Seguimiento
- Mucha información. —> Material completo para que podáis repasar
- Podéis usar chatGPT
(con criterio y sin cortar y pegar)

Chat GPT ayuda

B código de python para función que calcule el máximo de una lista

Aquí tienes un código en Python que implementa una función para calcular el máximo de una lista:

```
python
def calcular_maximo(lista):
    if not lista: # Verificar si la lista está vacía
        return None

    maximo = lista[0] # Inicializar el máximo como el primer elemento de la lista

    for elemento in lista:
        if elemento > maximo:
            maximo = elemento

    return maximo
```

Puedes utilizar esta función pasando una lista como argumento y te devolverá el máximo valor presente en la lista. Por ejemplo:

```
python
mi_lista = [5, 9, 3, 1, 7]
resultado = calcular_maximo(mi_lista)
print(resultado) # Salida: 9
```

Recuerda que puedes reemplazar `mi_lista` con tu propia lista de números.

Chat GPT ayuda

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No es la manera más óptima

Introducción a Python

Con Python programar es fácil

Creador:

Guido Von Rossum 1991



Computer Programming for Everybody

In 1999, van Rossum submitted a funding proposal to DARPA called Computer Programming for Everybody, in which he further defined his goals for Python: an easy and intuitive language just as powerful as major competitors open source, so anyone can contribute to its development code that is as understandable as plain English suitability for everyday tasks, allowing for short development times Python has grown to become a popular programming language. As of November 2011, it was the 3rd most popular language on the GitHub social coding website. According to a programming language popularity survey it is consistently amongst the top 10 most mentioned languages in job postings. Furthermore, Python is consistently[clarification needed] in the top 10 most popular languages according to the TIOBE Programming Community Index.

Con Python programar es fácil

Creador:

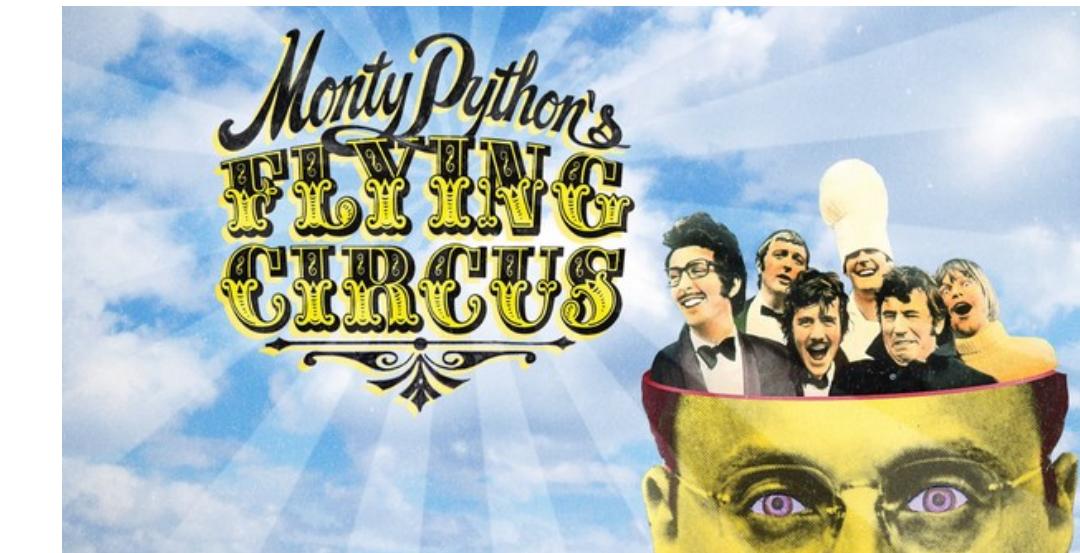
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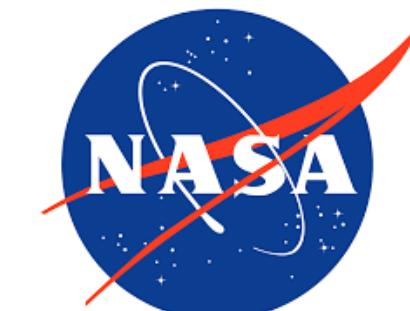


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Usan Python:



Con Python programar es fácil

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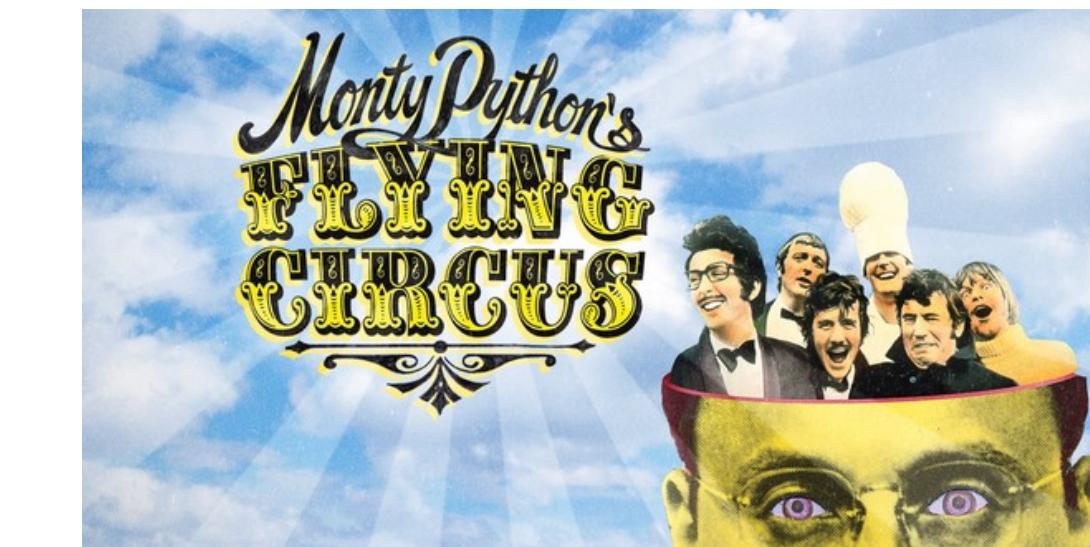
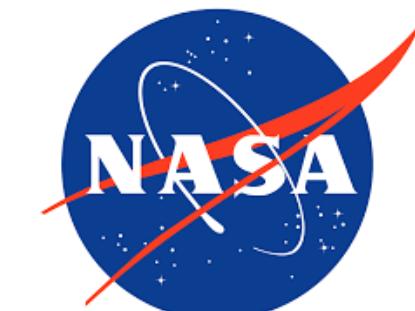


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Se llama Python por:

Usan Python:



Actualmente : Mantenido Python Software Foundation, non-profit organization.

Con Python programar es fácil

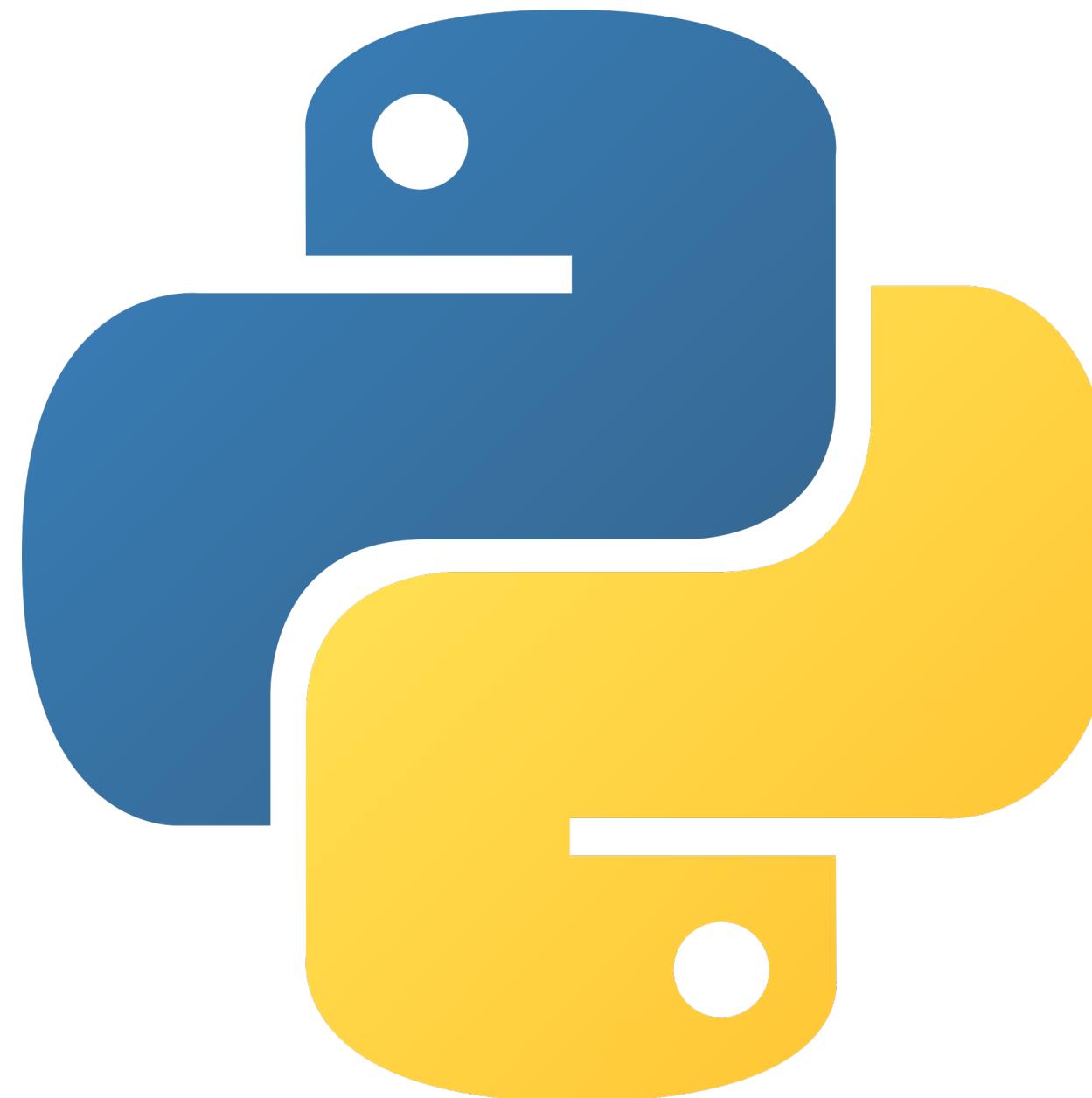


Python es un intérprete. —> librerías escritas en C, y otros

Pros —> Intuitivo, fácil

Cons —> Más lento, Memory Intensive, errores run

Con Python programar es fácil



Python es un intérprete. —> librerías escritas en C, y otros

Pros —> Intuitivo, fácil

Cons —> Más lento, Memory Intensive, errores run

Espíritu Python

Leíble

Simple

Organizado

Elegante

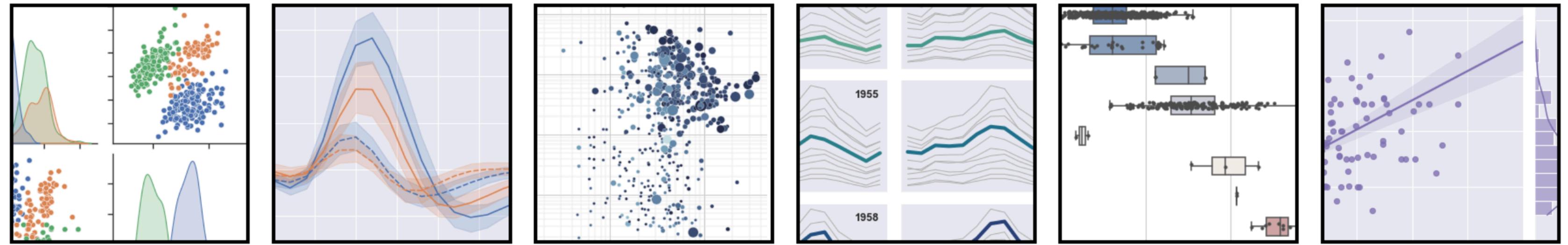
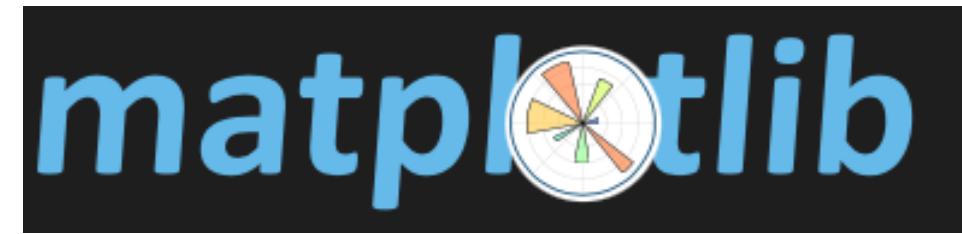
Explícito

Práctico

5 cosas cool que puedes hacer con Python

1. Visualización de Datos

Sacar información de tus datos con gráficos



2. Tratamiento de imágenes y texto

Leer y modificar imágenes

Identificación y reconocimiento de texto



3. Automatizar tareas

Web scraping

Mandar mails automáticos

Gestión de bases de datos

....

BeautifulSoup

sqlite3



```
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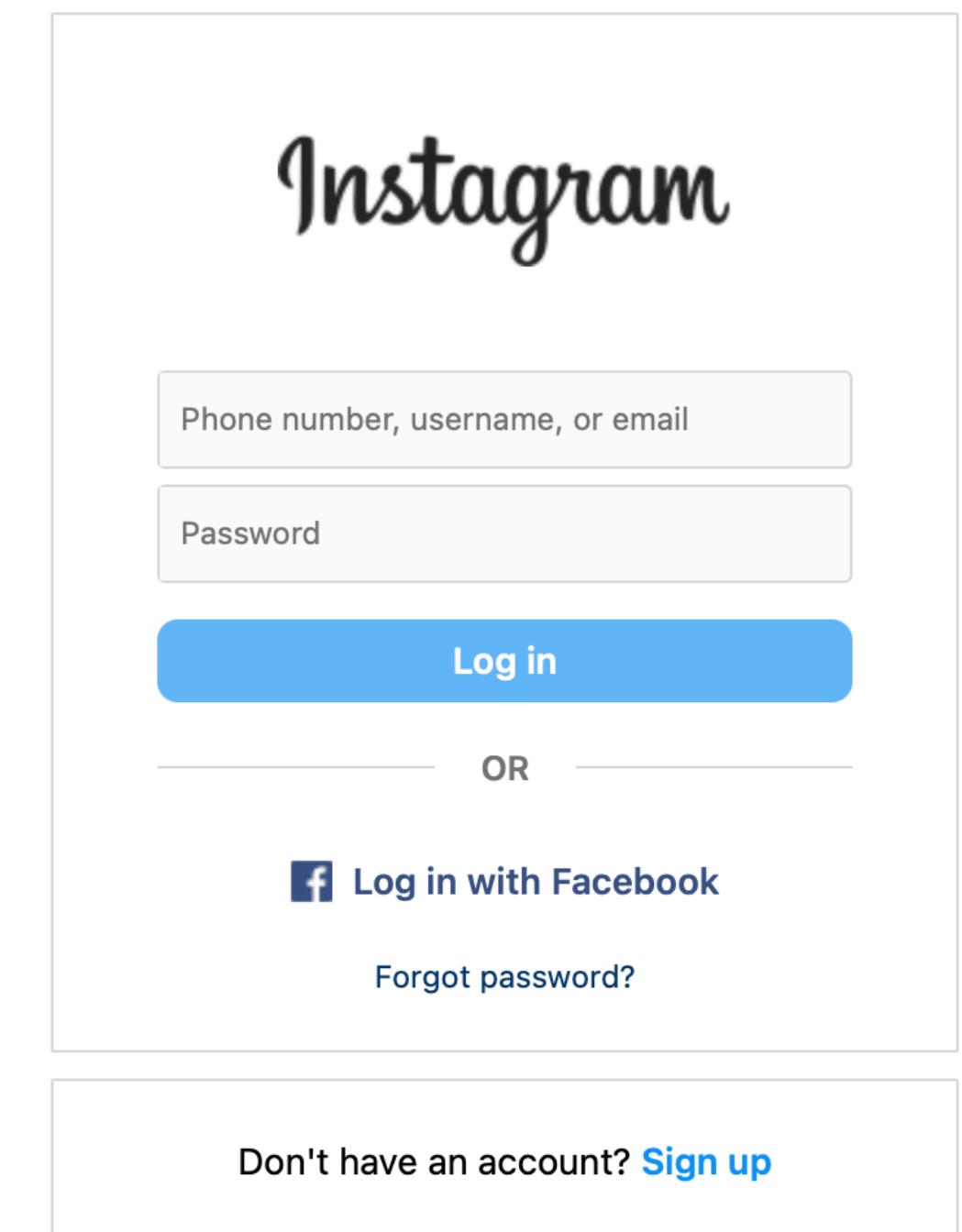
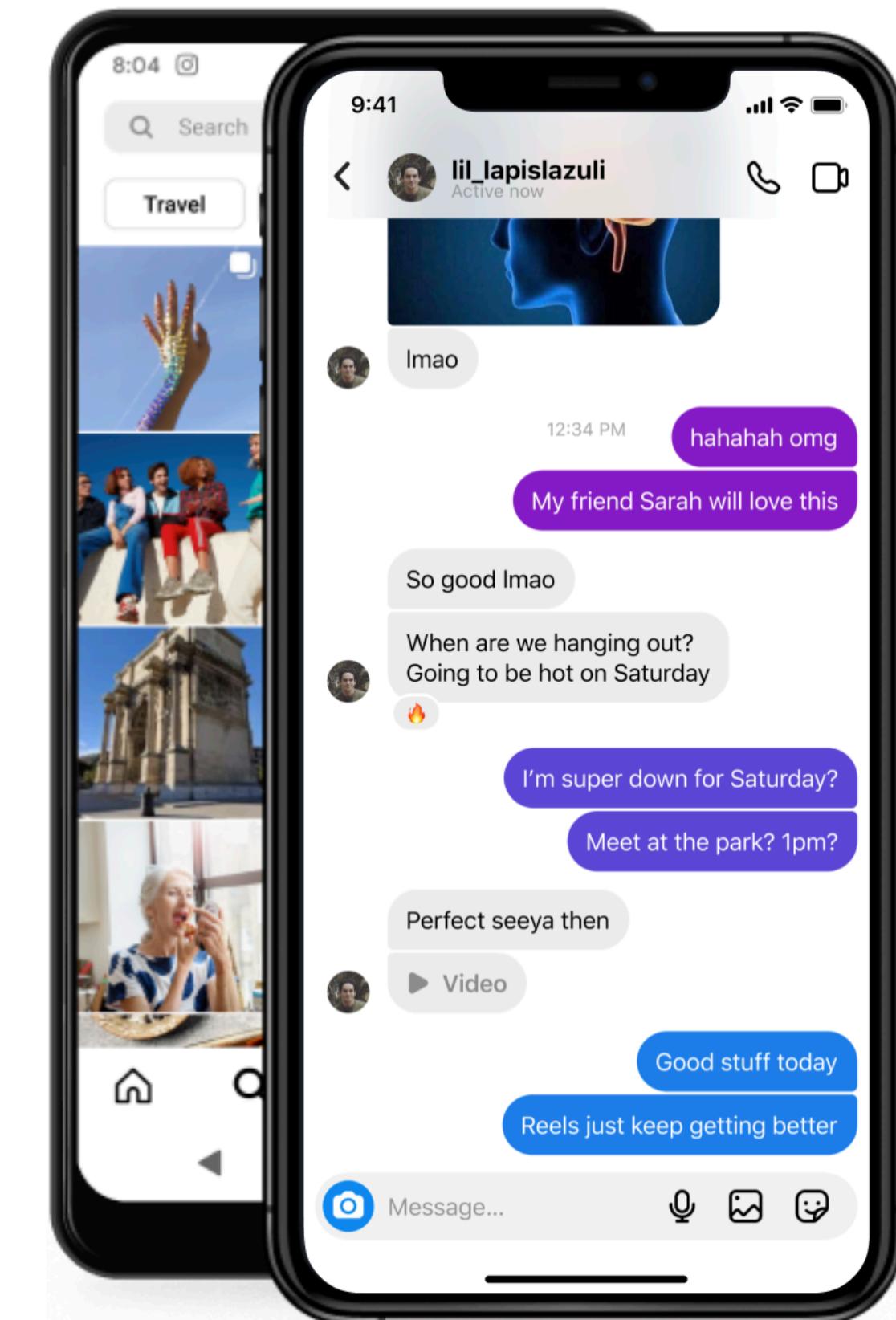
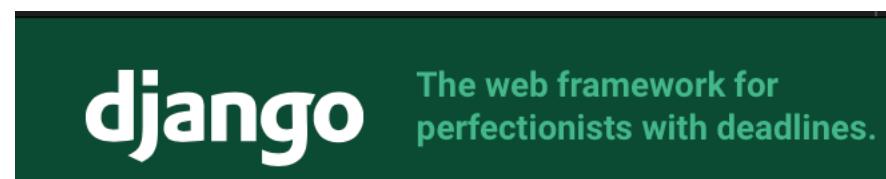
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 <div class="container">
 <div class="carousel-caption">
 <h1>One more for good measure.</h1>
 <p>Cras justo odio, dapibus ac facilisis in, egestas eget quam. Donec id elit non mi porta gravida at eget metus.</p>
 <p>Previous Next</p>
 </div>
 </div>
</div>
<!-- /.carousel -->
<!-- Featured Content Section -->
<div class="container">
 <div class="row">
 <div class="col-md-4"></div>
 <div class="col-md-4"><h2>FEATURED CONTENT</h2></div>
 <div class="col-md-4"></div>
 </div>
</div>
<!-- 4 small -->

4. Web Applications

Generación de web



Flask



4. Web Applications

Generación de web



Flask

django

The web framework for
perfectionists with deadlines.

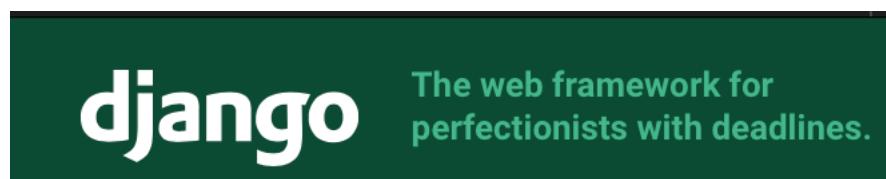
The screenshot shows the official NASA website homepage. At the top, there's a dark header bar with the NASA logo on the left and navigation links: Missions, Galleries, NASA TV, Follow NASA, Downloads, About, and NASA Audiences. Below this is a secondary navigation bar with categories: Humans in Space, Moon to Mars, Earth, Space Tech, Flight, Solar System and Beyond, STEM Engagement, History, and Benefits to You. The main content area features several large images: one of a large white rocket component labeled "WEIGHT 3550 LBS" and "RATED LOAD 6 PERSONS OR 1800 LBS"; another of two people working on a complex piece of equipment; and a third of a star-filled galaxy with the caption "Hubble Captures a Billowing Irregular Galaxy". To the right, there's a sidebar titled "NASA Events" listing upcoming events like the opening of the NA and a spacewalk. At the bottom, there's a photo of four people in blue shirts standing in front of a large aircraft, with the text "NASA Hubble".

4. Web Applications

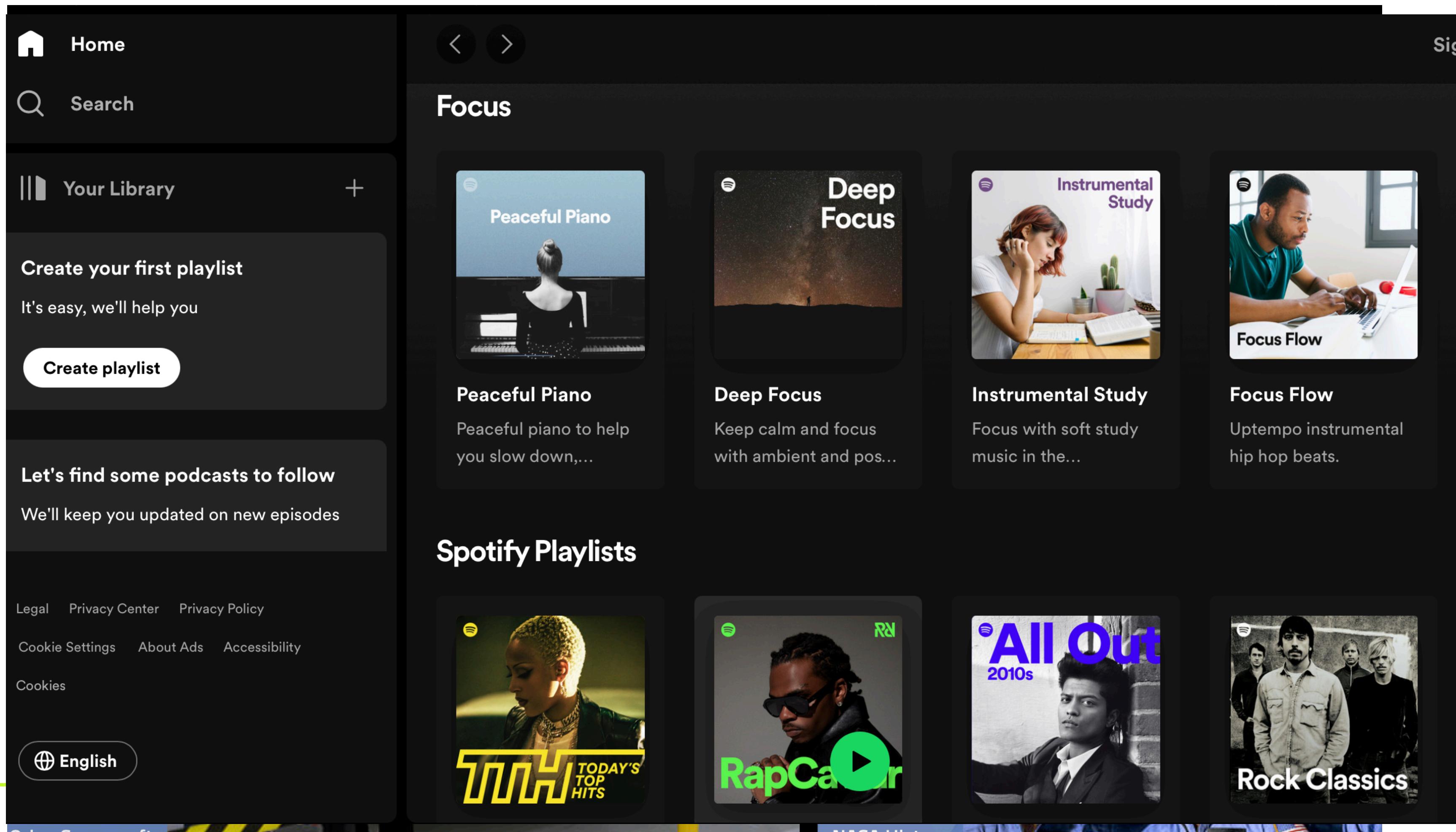
Generación de web



Flask



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The image shows a screenshot of the Spotify mobile application. At the top, there's a navigation bar with icons for Home, Search, and a user profile (labeled 'Sig'). Below this is a large section titled 'Focus' with a left and right arrow. Underneath, there are four cards representing different focus playlists:

- Peaceful Piano**: Features a woman at a piano. Description: "Peaceful piano to help you slow down,...".
- Deep Focus**: Features a dark background with a small figure. Description: "Keep calm and focus with ambient and pos...".
- Instrumental Study**: Features a woman sitting at a desk with a plant. Description: "Focus with soft study music in the...".
- Focus Flow**: Features a man working on a laptop. Description: "Uptempo instrumental hip hop beats.". A portion of another card, "Rock Classics", is visible on the far right.

At the bottom of the screen, there are sections for "Spotify Playlists" and "Recently Played". The footer contains links for Legal, Privacy Center, Privacy Policy, Cookie Settings, About Ads, Accessibility, Cookies, and a language selector set to English.

4. Web Applications

Generación de web



django The web framework for perfectionists with deadlines.

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Democracy Dies in Darkness

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How government rules for classified papers could help Trump delay his trial

The Classified Information Protection Act controls how U.S. secrets may be handled at a criminal trial. The rules under the law could stretch out the prosecution of Donald Trump.

By Pauline Powers and Bryan Clegg



OPINIONS >

My father pulled off the landing – till the very end

Opinion by Paul Hendrickson



▶ Author narrated 16 min

You knew Daniel



4. Web Applications

Generación de web



Flask

django

The web framework for
perfectionists with deadlines.

BIUSE CASAPONSA 26/06/2023

The screenshot shows the Netflix homepage with a dark background. At the top, there is a navigation bar with links to 'Inicio', 'Series', 'Películas', 'Novedades más vistas', 'Mi lista', and 'Explorar por idiomas'. On the right side of the header, there is a search icon, a language selection dropdown set to 'Infan...', and a 'sign in' button. Below the header, there is a large banner with the text 'Solo en Netflix' and several movie and TV show thumbnails. One thumbnail for 'LA REINA CARLOTA' has a red 'TOP 10' badge. Another for 'VALERIA' also has a 'TOP 10' badge. In the center, there is a section titled 'Tendencias ahora' with more thumbnails for shows like 'BLACK MIRROR', 'LA CAZA', 'NEW AMSTERDAM', and 'the office'. At the bottom, there is a section titled 'Seguir viendo para BCG' with thumbnails for 'LOS PACIENTES DEL DOCTOR GARCÍA', 'DIVISIÓN PALERMO', and 'ALI WONG BABY COBRA'.

5. Machine Learning Tools

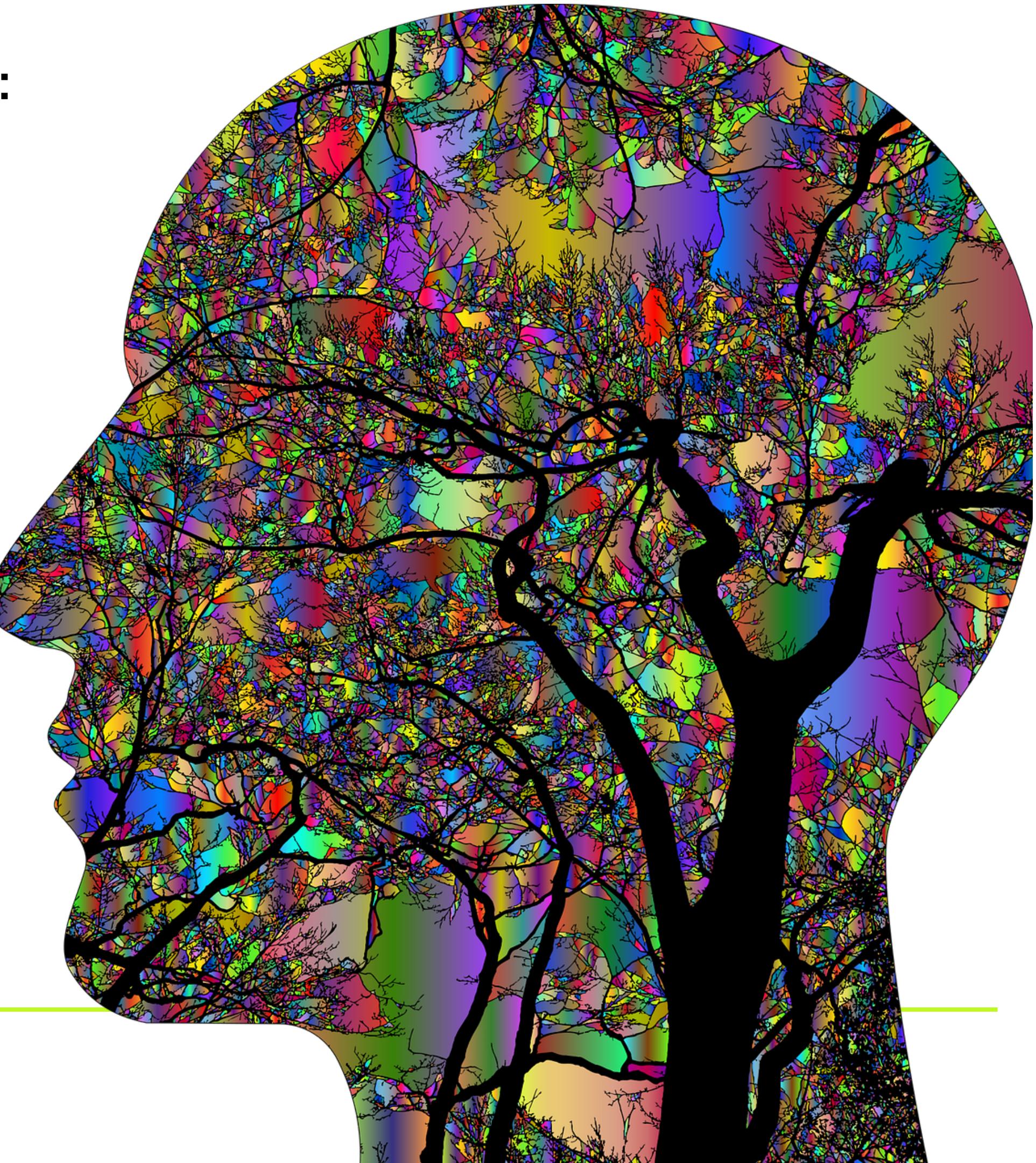
Paquetes de *machine learning* más potentes actualmente:



Librerías fáciles de instalar

Mucha documentación (tutoriales, ejemplos,...)

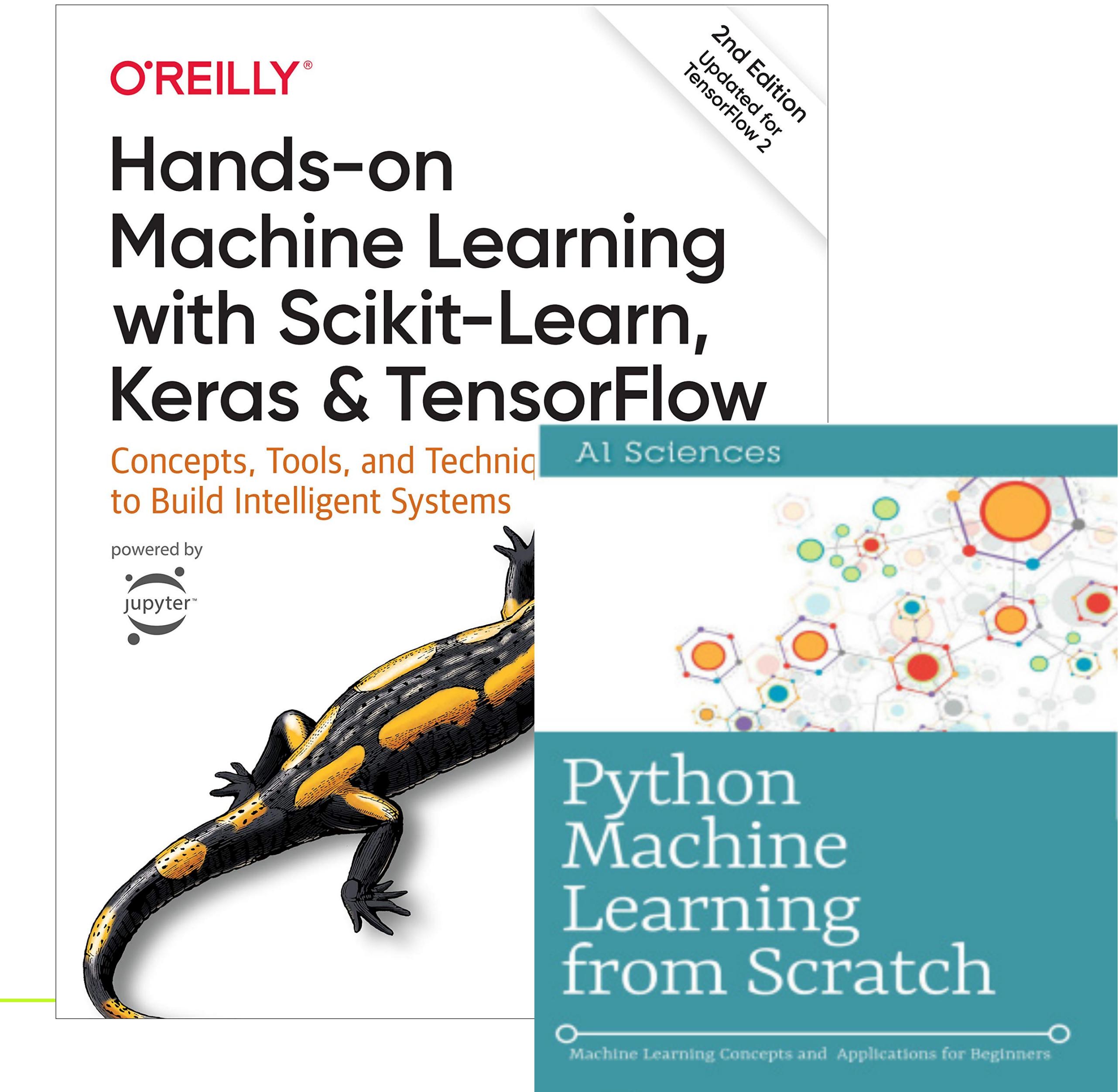
Code sharing / community programming (YOLO)



ML no entra :(

Inteligencia artificial (IA) y
machine learning (ML)
desde cero

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En resumen

Sencillo de aprender

Código libre y gratuito

Recompensa rápido



Herramientas open source

Comunidad y documentación

Potentes librerías ML

Aplicaciones increíbles

¡Vamos a ello!



Python Instalación

- * **Python**

<https://www.python.org/downloads/>

- * **conda**

[!\[\]\(ec1b4bedfa6077be5e53bf0276b8c0c5_img.jpg\) https://docs.anaconda.com/anaconda/install/index.html](https://docs.anaconda.com/anaconda/install/index.html)

- * o usar **Google Colab**

- Subir archivos en el drive de gmail y abrirlos con *Colaboratory*

Anaconda

A screenshot of the Anaconda Navigator application. The top navigation bar includes the Anaconda logo, the title "Anaconda Navigator", a "Sign in to Anaconda Cloud" button, and an "Update" button. On the left, a sidebar has a "Home" icon and three green buttons labeled "Environments", "Learning", and "Community". The main area is titled "My Applications" and displays five application cards: "jupyter notebook" (circled in red), "qtconsole", "spyder", "glueviz", and "orange-app". Each card shows a thumbnail, the application name, a brief description, its current version, and a "Launch" or "Install" button.

Application	Description	Version	Action
jupyter notebook	Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.	4.1.0	Launch
qtconsole	PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more.	4.2.0	Launch
spyder	Scientific PYthon Development EnviRonment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features	2.3.8	Launch
glueviz	Multidimensional data visualization across files. Explore relationships within and among related datasets.	0.7.2	Install
orange-app	Component based data mining framework. Data visualization and		

JupyterLab —> aplicación web que permite compartir y ejecutar documentos

BIUSE CAS

que contienen código, texto, imágenes,...

Anaconda



Quit Logout

Files Running Clusters

Select items to perform actions on them.

Upload New



Name Last Modified File size

<input type="checkbox"/>	0	/	
<input type="checkbox"/>	data		7 hours ago
<input type="checkbox"/>	images		7 hours ago
<input type="checkbox"/>	img		7 hours ago
<input type="checkbox"/>	Ejercicios_Resueltos_intro.ipynb		7 hours ago 25.4 kB
<input checked="" type="checkbox"/>	N0_JupyterNotebook.ipynb	Running 36 minutes ago	38.7 kB
<input type="checkbox"/>	N1_PythonBasic-ej_resueltos.ipynb	7 hours ago	44.6 kB
<input type="checkbox"/>	N1_PythonBasic.ipynb	7 hours ago	44.3 kB
<input type="checkbox"/>	N2_Estructuras_de_control_de_flujo-ej_resueltos.ipynb	7 hours ago	33.8 kB
<input type="checkbox"/>	N2_Estructuras_de_control_de_flujo.ipynb	7 hours ago	22 kB
<input type="checkbox"/>	N3_Funciones-ejercicios_resueltos.ipynb	7 hours ago	21.6 kB
<input type="checkbox"/>	N3_Funciones.ipynb	7 hours ago	19.6 kB
<input type="checkbox"/>	N4_leitura_y_escritura_de_ficheros-ejercicios_resueltos.ipynb	7 hours ago	559 kB
<input type="checkbox"/>	N4_leitura_y_escritura_de_ficheros.ipynb	7 hours ago	10.5 kB
<input type="checkbox"/>	N5_optimizacion_y_profiling.ipynb	31 minutes ago	228 kB
<input type="checkbox"/>	intro.key	10 minutes ago	40.1 MB
<input type="checkbox"/>	modulo.py	7 hours ago	0 B
<input type="checkbox"/>	modulo_prueba.py	7 hours ago	293 B

Jupyter —> Si lo abrís desde conda, se abre en el home. Id a la carpeta donde tengáis las notebooks

Anaconda



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Files Running Clusters

Select items to perform actions on them.

Upload New

<input type="checkbox"/> 0	<input type="checkbox"/> /	Name	Last Modified	File size
			7 hours ago	
	<input type="checkbox"/> data		7 hours ago	
	<input type="checkbox"/> images		7 hours ago	
	<input type="checkbox"/> img		7 hours ago	
	<input type="checkbox"/> Ejercicios_Resueltos_intro.ipynb		7 hours ago	25.4 kB
	<input checked="" type="checkbox"/> N0_JupyterNotebook.ipynb	Running	36 minutes ago	38.7 kB
	<input type="checkbox"/> N1_PythonBasic-ej_resueltos.ipynb		7 hours ago	44.6 kB
	<input type="checkbox"/> N1_PythonBasic.ipynb		7 hours ago	44.3 kB
	<input type="checkbox"/> N2_Estructuras_de_control_de_flujo-ej_resueltos.ipynb		7 hours ago	33.8 kB
	<input type="checkbox"/> N2_Estructuras_de_control_de_flujo.ipynb		7 hours ago	22 kB
	<input type="checkbox"/> N3_Funciones-ejercicios_resueltos.ipynb		7 hours ago	21.6 kB
	<input type="checkbox"/> N3_Funciones.ipynb		7 hours ago	19.6 kB
	<input type="checkbox"/> N4_leitura_y_escritura_de_ficheros-ejercicios_resueltos.ipynb			
	<input type="checkbox"/> N4_leitura_y_escritura_de_ficheros.ipynb			
	<input type="checkbox"/> N5_optimizacion_y_profiling.ipynb			
	<input type="checkbox"/> intro.key			
	<input type="checkbox"/> modulo.py			
	<input type="checkbox"/> modulo_prueba.py			

Clases y ejercicios t.ly/HymQ

Jupyter —> Si lo abrís desde conda, se abre en el home. Id a la carpeta donde tengáis las notebooks

An



Quit Logout

Files Running Clusters

Select items to perform actions on them.

The screenshot shows the Jupyter Notebook interface. On the left, there is a file browser with a sidebar containing a dropdown menu for 'Name' and buttons for 'Upload' and 'New'. The 'New' button has a dropdown menu open, showing options: 'Notebook', 'Python 2', 'Python 3' (which is circled in red), 'Text File', 'Folder', and 'Terminal'. The main area displays a list of files and folders:

File/Folder	Last Modified
0	hace un mes
2017	hace un año
2018	hace 2 años
2019	hace 2 años
ACEITES	hace un año
Applications	hace un año
bulk_project_data	hace un año
certificadoCoptia	hace 2 años
data	hace 2 años
DATOS_SAL	hace un año
Desktop	hace unos segundos
Documents	hace 5 meses
Downloads	hace 6 horas
Dropbox	hace un mes

Jupyter → También se puede abrir una notebook nueva