ArcGIS API for Python
What is the ArcGIS API for Python
A powerful Python library for spatial analysis, mapping and GIS

ArcGIS API for Python is a Python library for working with maps and geospatial data, powered by web GIS. It provides simple and efficient tools for sophisticated vector and raster analysis, geocoding, map making, routing and directions, as well as for organizing and managing a GIS with users, groups and information items. In addition to working with your own data, this library enables access to ready-to-use maps and curated geographic data from Esri and other authoritative sources. It also integrates well with the scientific Python ecosystem and includes rich support for Pandas and Jupyter notebook.

Understand your GIS
This “hello world” style notebook shows how to get started with the GIS and visualize its contents.
  > Get started with the GIS class

Manage your GIS
The ArcGIS API for Python provides APIs and samples for ArcGIS Online administrators to manage their online organization.
  > Create a portal

Perform Spatial Analysis
Call sophisticated spatial analysis tools that work with online content, using a few lines of code.
  > Chennai floods analysis
ArcGIS API for Python and ArcPy

ArcGIS API for Python
• Script against a portal
  - ArcGIS Online or ArcGIS Enterprise
  - Python 3.x
• Analysis, Portal Admin, Content Creation, Big Data Analysis

ArcPy
• ArcGIS Desktop
  - ArcMap – Python 2.x
  - ArcGIS Pro – 3.x
• Mostly geoprocessing
• Some map automation
Four different groups working with the ArcGIS API for Python

- Org Administrators
- Content Publishers
- GIS Analysts and Data Scientists
- Power Users/Developers
Whom is it for?
Automate Web GIS management
- Populate portal with users, groups
- Clone portals
- Reassign user content
- Perform comprehensive content search
- Determine item relationship
- Create reports of users, their items

Automate content creation
- Automate content publishing during off peak hours
- Update tiles and features from a known database
- Replicate development environment content to production
- Inspect and update items with broken service links

Reproducible research
- Access big data tools programmatically
- Utilize rich 3rd party Python packages for data analysis
- Create rich charts, graphs, embed 2D and 3D maps in Jupyter Notebook environment
- Share your research with data and notes with peers
ArcGIS + Jupyter = ❤️
It all starts with your GIS

In [1]: from arcgis.gis import GIS

In [2]: gis = GIS('https://deldev.maps.arcgis.com', 'demo_deldev')

In [3]: enterprise = GIS('https://python.playground.esri.com/portal', 'arcgis_python',
Restaurants (Washington DC) HeatMap

- Feature Layer Collection by cgbarris_blueraster
- Last Modified: October 23, 2017
- 0 comments, 1,167 views

DC_TapIt

Tap It is a DC program identifying restaurants and other establishments that allow individuals to refill their water bottles for free.

- Feature Layer Collection by mbasse6_GISandData
- Last Modified: October 26, 2014
- 0 comments, 112 views

Business & Economic Development

Sidewalk Cafe

This data is used for the planning and management of Washington, D.C. by local government agencies.

- Feature Layer Collection by DCGISopendata
- Last Modified: January 29, 2018
- 0 comments, 150 views
Visualize layers on map widget

```python
In [44]: map = gis.map("Washington, DC, USA")
map
```

```python
In [51]: rest = rest_content[2]
map.add_layer(rest)
```
Script and automate your Web GIS

The ArcGIS API for Python lets ArcGIS Online and ArcGIS Enterprise users, analysts, developers and administrators script and automate tasks ranging from performing big data analysis to content management and administration of their web GIS. The API integrates well with the Jupyter Notebook and the SciPy stack and enables academics, data scientists, and GIS analysts to share programs and reproducible research with others.
How do I get it?

• Try it Live! – [https://notebooks.esri.com](https://notebooks.esri.com)
• ArcGIS Pro 2.3 – included
• `pip` install arcgis
• `conda install -c esri arcgis`
• `docker pull esridocker/arcgis-api-python-notebook`
Different authentication schemes

- anonymous users
- built-in users
- users using LDAP, via
  - Basic authentication
  - Portal tier authentication
- users using Integrated Windows Authentication (IWA) through NTLM or Kerberos
- smart card users / PKI authentication using certificate and key files
- users connected to an ArcGIS Enterprise instance using ArcGIS Pro
Workflows for Org Administrators

Administrative_Workflows.ipynb
Clean.py
Workflows for Analysts
Analysis_Workflow.ipynb
Resources

- Website - https://developers.arcgis.com/python/
- GitHub repo - https://github.com/Esri/arcgis-python-api
- Try it Live! - https://notebooks.esri.com
- Community - https://community.esri.com/groups/arcgis-python-api/
- Samples shown today - https://git.io/fhHkm
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Select the session you attended

Scroll down to find the feedback section

Complete answers and select “Submit”
Questions?