

# INTRO to DATA SCIENCE:

## APIs & JSON

## **INTRO TO DATA SCIENCE**

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# **I. APIS AND JSON**

JSON (JavaScript Object Notation) is a borrowed JavaScript form turned into a string that can be passed between applications.

JSON are passed through applications as **strings**, and converted into native objects per language.

```
>>> someFile = open('/Users/epodojil/GA_Data_Science/a.json').read()
>>> print json.dumps(someFile)
{"\n  \"glossary\": {\n    \"title\": \"example glossary\", \n    \"GlossDiv\": {\n      \"title\": \"S\", \n      \"GlossList\": {\n        \"GlossEntry\": {\n          \"ID\": \"SGML\", \n          \"SortAs\": \"SGML\", \n          \"GlossTerm\": \"Standard Generalized Markup Language\", \n          \"Acronym\": \"SGML\", \n          \"Abbrev\": \"ISO 8879:1986\", \n          \"GlossDef\": {\n            \"para\": \"A meta-markup language, used to create markup languages such as DocBook.\", \n            \"GlossSeeAlso\": [\"GML\", \"XML\"] \n          }, \n          \"GlossSee\": \"markup\" \n        } \n      } \n    } \n  } \n}"
>>> print someFile
{
  "glossary": {
    "title": "example glossary",
    "GlossDiv": {
      "title": "S",
      "GlossList": {
        "GlossEntry": {
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        }
      }
    }
  }
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>>> print json.loads(someFile)
{'glossary': {'GlossDiv': {'GlossList': {'GlossEntry': {'GlossDef': {'GlossSeeAlso': ['GML', 'XML'], 'para': 'A meta-markup language, used to create markup languages such as DocBook.'}, 'GlossTerm': 'Standard Generalized Markup Language', 'Acronym': 'SGML', 'Abbrev': 'ISO 8879:1986', 'SortAs': 'SGML', 'GlossSee': 'markup', 'ID': 'SGML'}}
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String

Object

```
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```

The diagram illustrates the relationship between different representations of data in Python:

- String**: Points to the JSON string output of `json.dumps(someFile)`.
- Object**: Points to the Python dictionary output of `json.loads(someFile)`.
- Python Dict**: Points to the Python dictionary structure, which is the same as the Object.

APIs (Application Programming Interface) allow people to interact with the structures of an application to get, put, delete, or update data.



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Best practices for APIs are to use RESTful principles.

RESTful APIs include:

The Base URL and collection.

An interactive media type (usually JSON)

Operations (GET, PUT, POST, DELETE)

Driven by Hypertext (http requests)

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Collection



**GET https://api.instagram.com/v1/users/10**



Operation

GET https://api.instagram.com/v1/users/  
search/?q=andy



Querystring

RESTful APIs can always be accessed using cURL requests: hence why hypertext access is a requirement!

Most have language libraries to make it easier to access through the language of your choice.

<http://www.pythonapi.com/>