University Consortium for GEOGRAPHIC INFORMATION SCIENCE

UCGIS BoK RESTfull API

The UCGIS BoK Application Programming Interface (API) is a component of the BoK software platform that makes the content of the Body of Knowledge programmatically available. It allows retrieving the complete BoK – including current and historical versions – as a JSON file through https://ucgis-api-default-rtdb.firebaseio.com/.json and querying it through dedicated REST calls.

The JSON is formatted as follows:

```
{
"current": {
            "concepts" : {            // collection of concepts accessible by its code
                  "<concept_code>" : {
                              "contributors" : {},
                              "description" : "",
                              "id" : "",
                              "uri"  : "",
                              "name" : "",
                              "references" : [],
                              "relations" : [],
                              "selfAssesment" : "",
                              "skills" : []
                              },
                              {[…]}
            },
            "contributors" : [  {     // array of contributors
                              "concepts" : [ "<concept_code>", "<concept_code>" […]],
                              "description" : "",
                              "name" : "",
                              "url"  : "",
                              },
                              {…}
                              ],
            "references" : [    {      // array of references
                              "concepts" : [ "<concept_code>", "<concept_code>" […]],
                              "description" : "",
                              "name" : "",
                              "url"  : "",
                              },
                              {…}
                              ],
            "relations" : [     {      // array of relations
                              "name" : "",
                              "source" : "<concept_code>",
                              "target" : "<concept_code>"
                              },
                              {…}
                              ],
            "skills" : [        {      // array of skills
                              "concepts" : "<concept_code>",
                              "name" : ""
                              },
                              {…}
                              ]
```

```
                },
"v1":           {                                   // same structure as current
                "concepts" : {},
                "contributors" : {},
                "references" : {},
                "relations" : {},
                "skills" : {}
                },
"v2":           {                                   // same structure as current
                "concepts" : {},
                "contributors" : {},
                "references" : {},
                "relations" : {},
                "skills" : {}
                },
[…]
}
```

To retrieve specific content, we can navigate the aforementioned BoK JSON structure from the base URL (https://ucgis-api-default-rtdb.firebaseio.com/.json) We start by specifying the version (e.g., https://ucgis-api-default-rtdb.firebaseio.com/current/.json or https://ucgis-api-default-rtdb.firebaseio.com/v1/.json), and can then add the path to the specific information we desire. Finally, we always add ".json", to retrieve the desired content in JSON format. For example:

- `/current/.json` returns the complete current version of the BoK.
- `/current/concepts/.json` returns all concepts from the current version of the BoK
- `/current/relations/.json` returns all relations from the current version of the BoK
- `/current/skills/.json` returns all skills from the current version of the BoK
- `/current/concepts/AM-01.json` returns the info of the concept with code "AM-01" in the current version of the BoK.
- `/current/concepts/AM-01/name.json` returns the name of the concept with code "AM-01" in the current version of the BoK
- `/current/concepts/AM-01/relations.json` returns all the relations, as an array, of the concept with code "AM-01" in the current version of the BoK
- `/current/contributors/.json` returns all contributors, from the current version of the BoK

To retrieve content from previous versions, we specify the desired version in the path. All versions follow the same structure, so the above examples also work for previous versions. For example:

- `/v1/concepts/AM-01/name.json` returns the name of the concept with code “AM” in the v1 version of the BoK
- `/v1/concepts/AM-01/relations.json` returns all the relations, as an array, of the concept with code “AM” in the v1 version of the BoK
- `/v1/skills/.json` returns all skills, from the v1 version of the BoK

The following table shows some example queries and their results.

All data	**Parameter(s)**	
https://ucgis-api-default-rtdb.firebaseio.com/.json?print=pretty	`print=pretty`	To view the data in a human-readable format.

Result


```
{
  "current" : {
    "concepts" : {
      "AM" : {
        "description" : " ",
        "id" : "AM",
        "name" : "Analytics and Modeling",
        "relations" : [ {
          "name" : "is subconcept of",
          "source" : "AM",
          "target" : "UCGIS"
        }, {
          "name" : "is subconcept of",
          "source" : "AM-44",
          "target" : "AM"
        },
          […]
        , {
          "name" : "is subconcept of",
          "source" : "AM-97",
          "target" : "AM"
        } ],
        "uri" : "https://ucgis-bok.web.app/AM"
      },
      "AM-01" : {
        "description" : " ",
        "id" : "AM-01",
        "name" : "Academic foundations",
        "relations" : [ {
          "name" : "is subconcept of",
          "source" : "AM-01",
          "target" : "AM"
        } ],
        "skills" : [ "Contrast the analytical approaches taken in various academic disciplines in
which geospatial analysis has evolved", "Differentiate between exploratory and confirmatory
geospatial data analysis", "Differentiate geospatial data analysis from non-spatial data
analysis", "Explain how the \"Quantitative Revolution\" was important in the development of
GIS&T", "Explain the origins of the term \"Quantitative Revolution\" in geography and other
disciplines" ],
        "uri" : "https://ucgis-bok.web.app/AM-01"
      },
      "AM-02" : {
        "description" : " ",
        "id" : "AM-02",
        "name" : "Analytical approaches",
[…]
}
```

Get current version of BoK	Parameter(s)	
https://ucgis-api-default-rtdb.firebaseio.com/**current**.json?print=pretty	`print=pretty`	To view the data in a human-readable format.

Result


```
{
    "concepts" : {
      "AM" : {
        "description" : " ",
        "id" : "AM",
        "name" : "Analytics and Modeling",
        "relations" : [ {
          "name" : "is subconcept of",
          "source" : "AM",
          "target" : "UCGIS"
        }, {
          "name" : "is subconcept of",
          "source" : "AM-44",
          "target" : "AM"
        },
          […]
        , {
          "name" : "is subconcept of",
          "source" : "AM-97",
          "target" : "AM"
        } ],
        "uri" : "https://ucgis-bok.web.app/AM"
      },
      "AM-01" : {
        "description" : " ",
        "id" : "AM-01",
        "name" : "Academic foundations",
        "relations" : [ {
          "name" : "is subconcept of",
          "source" : "AM-01",
          "target" : "AM"
        } ],
        "skills" : [ "Contrast the analytical approaches taken in various academic disciplines in which geospatial analysis has evolved", "Differentiate between exploratory and confirmatory geospatial data analysis", "Differentiate geospatial data analysis from non-spatial data analysis", "Explain how the \"Quantitative Revolution\" was important in the development of GIS&T", "Explain the origins of the term \"Quantitative Revolution\" in geography and other disciplines" ],
        "uri" : "https://ucgis-bok.web.app/AM-01"
      },
      "AM-02" : {
        "description" : " ",
        "id" : "AM-02",
        "name" : "Analytical approaches",
        "relations" : [ {
          "name" : "is subconcept of",
          "source" : "AM-02",
          "target" : "AM"
        } ],
        "skills" : [ "Compare and contrast spatial statistical analysis, spatial data analysis, and spatial modeling", "Compare and contrast spatial statistics and map algebra as two very different kinds of data analysis", "Compare and contrast the methods of analyzing aggregate data as opposed to methods of analyzing a set of individual observations", "Define the terms spatial analysis, spatial modeling, geostatistics, spatial econometrics, spatial statistics, qualitative analysis, map algebra, and network analysis", "Differentiate between geostatistics and spatial statistics", "Discuss situations when it is desirable to adopt a spatial approach to the analysis of data", "Explain what is added to spatial analysis to make it spatio-temporal analysis", "Explain what is special (i.e., difficult) about geospatial data analysis and why some traditional statistical analysis techniques are not suited to geographic problems", "Outline the sequence of tasks required to complete the analytical process for a given spatial problem" ],
        "uri" : "https://ucgis-bok.web.app/AM-02"
      },
[…]
}
```

Get specific version of BoK (i.e. v1)	**Parameter(s)**	
https://ucgis-api-default-rtdb.firebaseio.com/**v1**.json?print=pretty	`print=pretty`	To view the data in a human-readable format.

Result


```
{
  "concepts" : {
    "AM" : {
      "description" : " ",
      "id" : "AM",
      "name" : "Analytics and Modeling",
      "relations" : [ {
        "name" : "is subconcept of",
        "source" : "AM",
        "target" : "UCGIS"
      }, {
        "name" : "is subconcept of",
        "source" : "AM-44",
        "target" : "AM"
      }, {
        "name" : "is subconcept of",
        "source" : "AM-32",
        "target" : "AM"
      },
[…]
}
```


Get info from specific concept (i.e. CV) from current version of BoK	**Parameter(s)**	
https://ucgis-api-default-rtdb.firebaseio.com/**current/concepts/CV**.json?print=pretty	`print=pretty`	To view the data in a human-readable format.

Result


```
{
  "description" : " ",
  "id" : "CV",
  "name" : "Cartography and Visualization",
  "relations" : [ {
    "name" : "is subconcept of",
    "source" : "CV",
    "target" : "UCGIS"
  }, {
    "name" : "is subconcept of",
    "source" : "CV-19",
    "target" : "CV"
  }, {
    "name" : "is subconcept of",
    "source" : "CV-12",
    "target" : "CV"
  }, {
    "name" : "is subconcept of",
    "source" : "CV-01",
    "target" : "CV"
  }, {

[…]
}
```

Get the name from specific concept (i.e. CV) from current version of BoK	**Parameter(s)**	
https://ucgis-api-default-rtdb.firebaseio.com/current/**concepts/CV/name**.json?print=pretty	`print=pretty`	To view the data in a human-readable format.

Result

```
"Cartography and Visualization"
```

Get skills from specific concept (i.e. CV-01) from current version of BoK	**Parameter(s)**	
https://ucgis-api-default-rtdb.firebaseio.com/**current/concepts/CV-01/skills**.json?print=pretty	`print=pretty`	To view the data in a human-readable format.

Result

```
[ "Compare and contrast the communication, representation, and post-representation theories of
cartography and identify the theories\"™ implications for the process of designing maps.",
"Describe how you could apply the scientific method to design an inquiry that investigates
whether map readers can remember changes in where the highest rates of lung cancer are found over
time by looking at an animated map or a set of small multiple maps.", "Read a piece of
cartographic research (e.g., a book chapter, journal article, book) and identify what kind of
theoretical approach it takes to cartographic design.", "Take a map designed to support
scientific thinking about climate change and re-design it to support science communication." ]
```

Get all skills from specific version (i.e. v1) of BoK	**Parameter(s)**	
https://ucgis-api-default-rtdb.firebaseio.com/**v1/skills**.json?print=pretty	`print=pretty`	To view the data in a human-readable format.

Result

```
[ {
  "concepts" : [ "DC-17" ],
  "name" : "[Radarsat"
}, {
  "concepts" : [ "DA-16" ],
  "name" : " Demonstrate basic skills in digital cartography, via the production of hardcopy and
digital maps with appropriate layout and information."
}, {
  "concepts" : [ "PD-05" ],
  "name" : "Acquire data from primary and secondary sources"
}, {
  "concepts" : [ "DC-24" ],
  "name" : "Acquire knowledge of how UAS technology is applied in geospatial research."
}, {
[…]
}
```