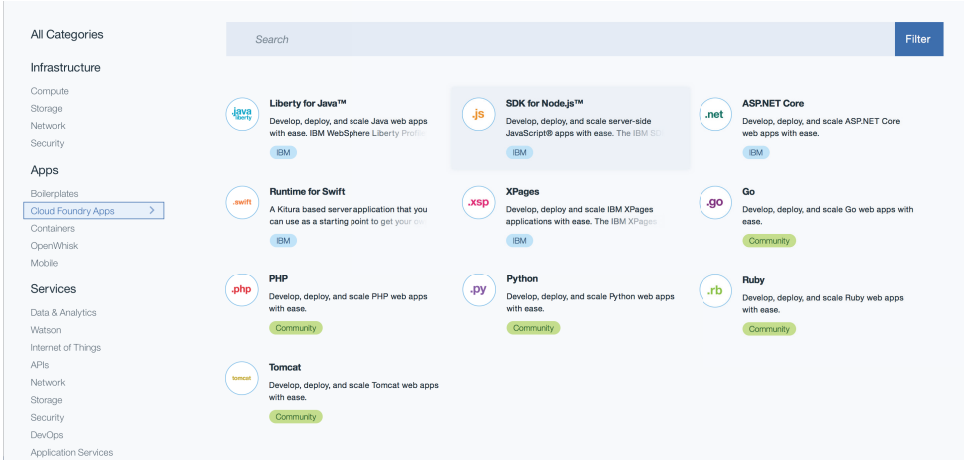
Setup Environment in IBM Bluemix

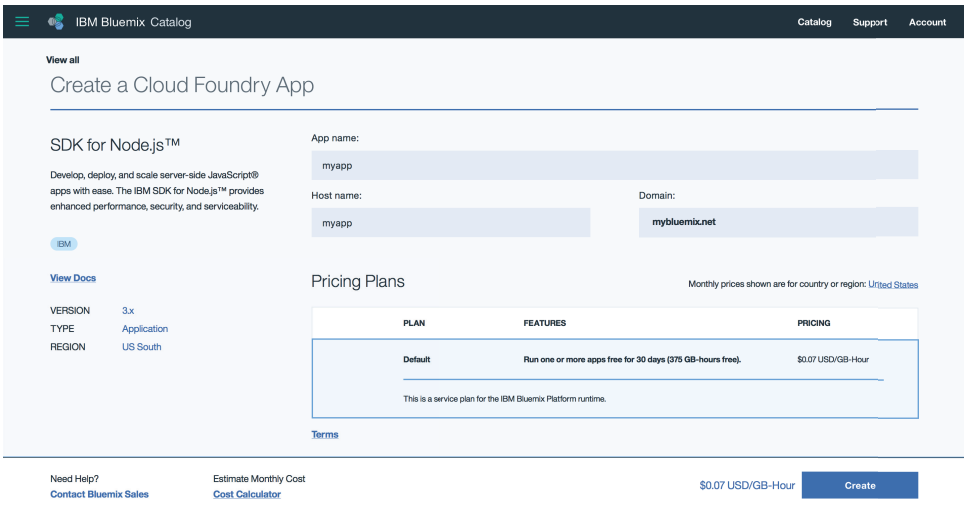
The Natural Language Understanding service analyzes text to extract meta-data from content such as concepts, entities, keywords, categories, sentiment, emotion, relations, semantic roles, using natural language understanding. This tutorial uses the Node.js runtime in IBM Bluemix and the Natural Language Understanding service to analyze content at a publicly accessible URL.

To get started, first create a Node.js application in IBM Bluemix. Visit `bluemix.net` and click on the **Catalog** link.

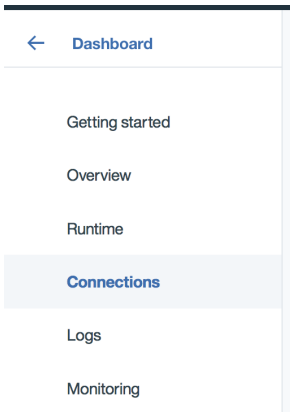
1. Select **SDK for Node.js** under the section titled `Cloud Foundry Apps`.



2. On the next screen, enter a name for your application in the field labeled `App name`. This name is for your convenience. Enter a host name, which will be the first part of the URL for your application. If you choose `myapp`, the application URL will be `myapp.mybluemix.net`. There can only be one application with the same host name across all of IBM Bluemix. Click on **Create** to create the application.

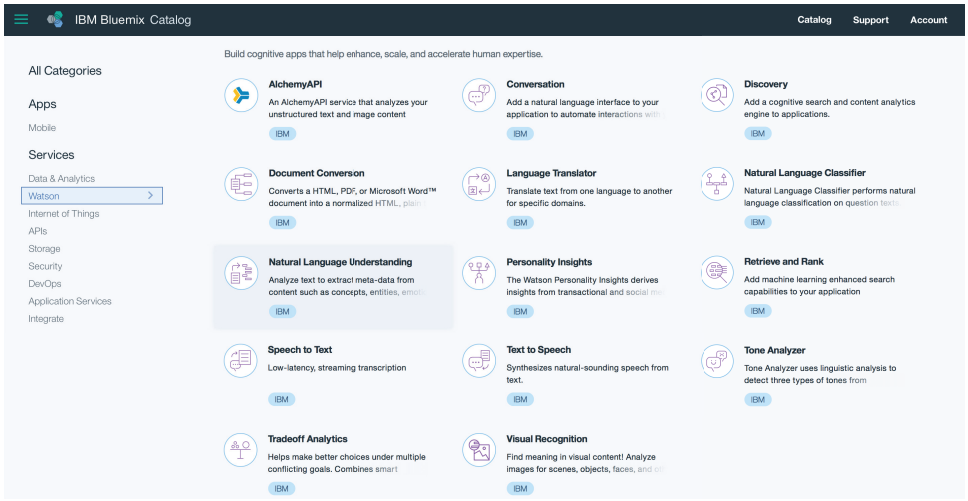


3. On the next screen, select **Connections** from the left sidebar.

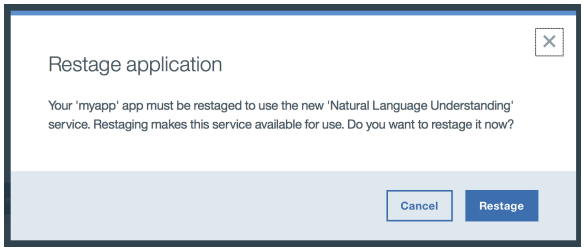


4. To use an IBM Watson service, we need to first create and bind the applicable Watson service to the IBM Bluemix application. In this lab, we'll use the Natural Language Understanding service. Click on the **Connect New** button on the right of the page.

5. Click on the **Natural Language Understanding** tile under the Watson section. You can leave the fields as the default values. Click on **Create**.



6. IBM Bluemix will prompt to restage the application. Click on **Restage**. The application will restart.

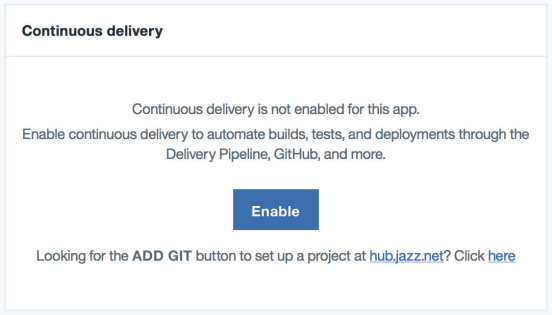


7. When the application has finished restaging, the Node.js application environment will contain the Watson service credentials.

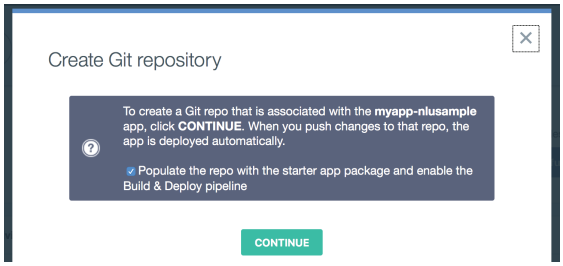
Create Git Repository/Import Project Files

In this section, we'll create a project that can utilize the web-based code editor in the IBM Bluemix DevOps Services. This step needs to be completed only once before proceeding through the section titled **Analyze a News Article.**

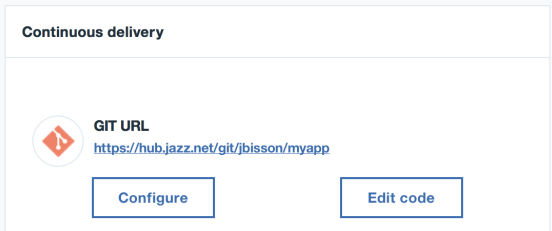
1. Open the application overview for the Node.js application. In the bottom-right corner in the box titled **Continuous delivery**, click on the last link, `Click here`, to set up a project at hub.jazz.net.



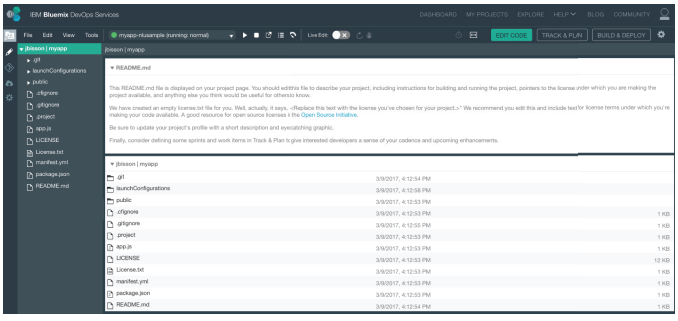
2. Ensure the checkbox is checked and click on **Continue**.



3. You will be returned to the application overview. Click on **Edit code**.

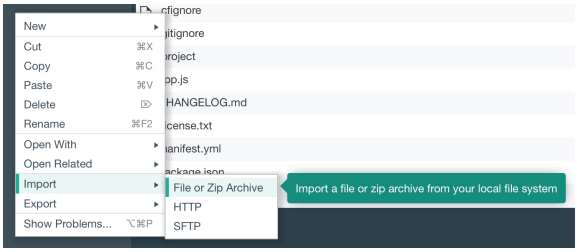


4. You will be taken into the IBM Bluemix DevOps Services tooling. You can edit code in the browser, commit changes to the Git repository, and setup testing and deployment pipeline options when code changes are made. The default pipeline automatically deploys new changes that are committed to the Git repository.

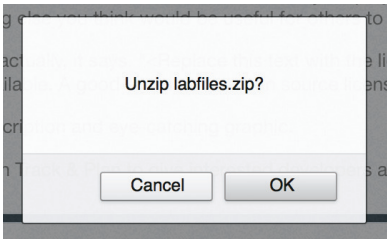


5. Let's import a couple of files that the following sections need. Download the Zip file from `ibm.biz/nodejs-nlu-labfiles`

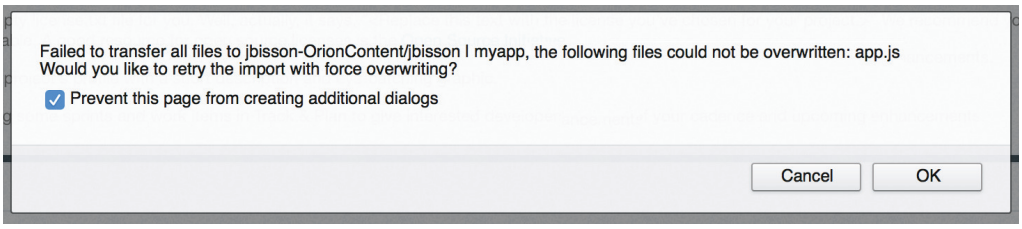
6. Under the file listing in the left sidebar, right click to display the context menu. Select **Import** -> **File or Zip Archive**. Select the downloaded Zip file.



7. When prompted to unzip the file, click **OK**.



8. Some of the files in the ZIP file already exist in the project. Click **OK** to force overwriting.



9. Edit the **package.json** file and add the `mustache` and `watson-developer-cloud` npm packages as shown below.

```
"dependencies": {
  "express": "4.13.x",
  "cfenv": "1.0.x",
  "mustache": "2.3.x",
  "watson-developer-cloud": "2.15.x"
}
```

Analyze a News Article

The Natural Language Understanding service analyzes text to extract meta-data from content such as concepts, entities, keywords, categories, sentiment, emotion, relations, semantic roles, using natural language understanding. You can either provide an URL where the content resides or a body of text to analyze. In this section, we will analyze a news article accessible via an URL.

The completed code snippet is shown below for reference. Continue to the next page for instructions.

Listing 1: Node.js code in app.js to call the Natural Language Understanding API

```
app.get("/analyze", function (req, res) {
  const NaturalLanguageUnderstandingV1 = require('watson-developer-cloud/natural-language-understanding/v1.js');

  const nlu = new NaturalLanguageUnderstandingV1({
    // note: if unspecified here, credentials are pulled from environment properties:
    // NATURAL_LANGUAGE_UNDERSTANDING_USERNAME & NATURAL_LANGUAGE_UNDERSTANDING_PASSWORD
    // username: '<username>',
    // password: '<password>',
    version_date: NaturalLanguageUnderstandingV1.VERSION_DATE_2016_01_23
  });

  const options = {
    //"text": "string",    // Text to analyze
    //"html": "string",    // HTML to analyze
    "url": req.query.url,  // URL to analyze
    "features": {
      "concepts": {
        "limit": 8         // Maximum number of concepts to return
      },
      "emotion": {
        "document": true   // Set this to false to hide document-level emotion results
      },
      "entities": {
        "limit": 50,       // Maximum number of entities to return
        "sentiment": true, // Set this to true to return sentiment information for detected entities
        "emotion": true    // Set this to true to analyze emotion for detected keywords
      },
      "keywords": {
        "limit": 50,       // Maximum number of keywords to return
        "sentiment": true, // Set this to true to return sentiment information for detected keywords
        "emotion": true    // Set this to true to analyze emotion for detected keywords
      },
      "metadata": {},
      "relations": {},
      "semantic_roles": {
        "limit": 50,       // Maximum number of semantic_roles results to return ,
        "keywords": false, // Set this to true to return keyword information for subjects and objects
        "entities": false  // Set this to true to return entity information for subjects and objects
      },
      "sentiment": {
        "document": true   // Set this to false to hide document-level sentiment results
      },
      "categories": {}
    }
  };

  nlu.analyze(options, function(err, response) {
    console.log(response);
    if (err) {
      res.send(err);
      return;
    }

    if (req.query.format == "json") {
      res.send(response);
    } else {
      res.send(mustache.render(templates.analyze, response));
    }
  });
});
```

Copy and paste the code at:

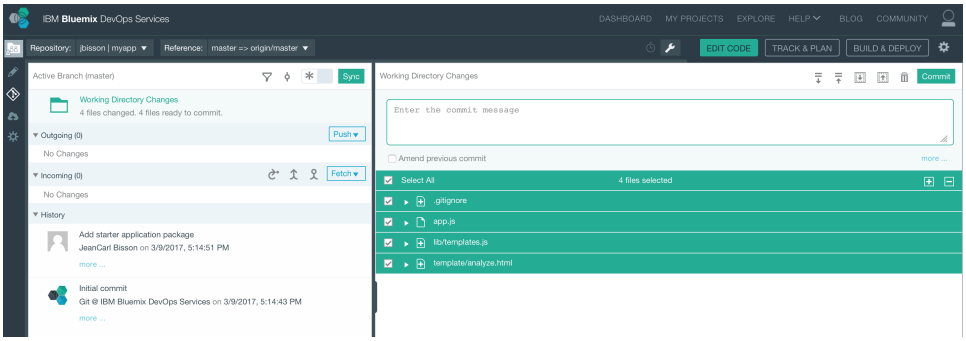
ibm.biz/nodejs-nlu-analyze

1. Add the code from *Listing 1* to the file named `app.js`. You can also find the code snippet at `ibm.biz/nodejs-nlu-analyze`

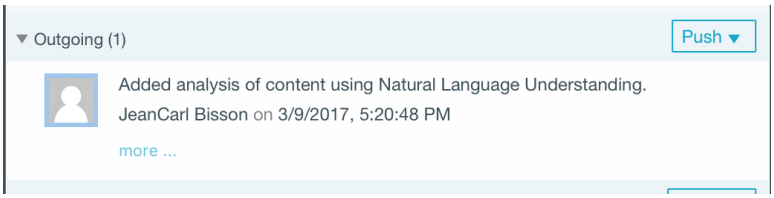
```
41  // get the app environment from Cloud Foundry
42  var appEnv = cfenv.getAppEnv();
43
44  // Insert application endpoints here
45
46  // start server on the specified port and binding host
```

2. Click on the Git icon on the left side of the web-based editor in the IBM Bluemix DevOps Services.

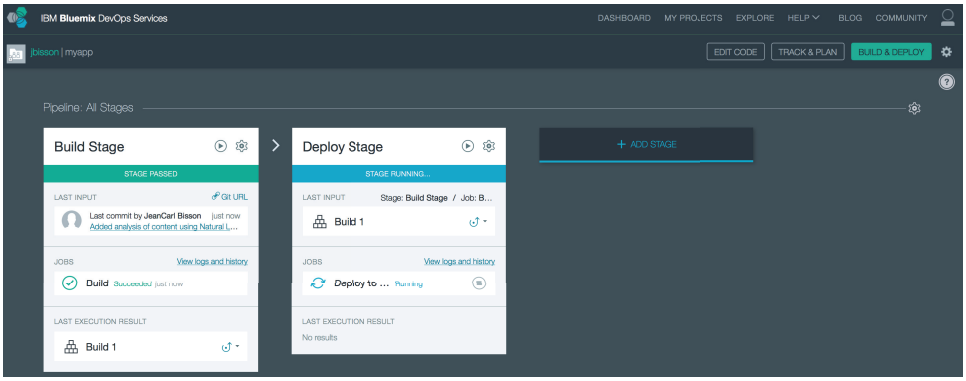
3. Files that have been changed or added will be listed in the pane on the right. Enter a commit message that describes these changes. Click on **Commit** in the top-right corner.



4. A new item will be added in the `Outgoing` list in the left pane. Click on the **Push** button to push these changes.



5. Click on the **Build and Deploy** button in the top-right corner of the page. This is where you can watch the two stages in the pipeline that are triggered when new code is committed to the Git repository.

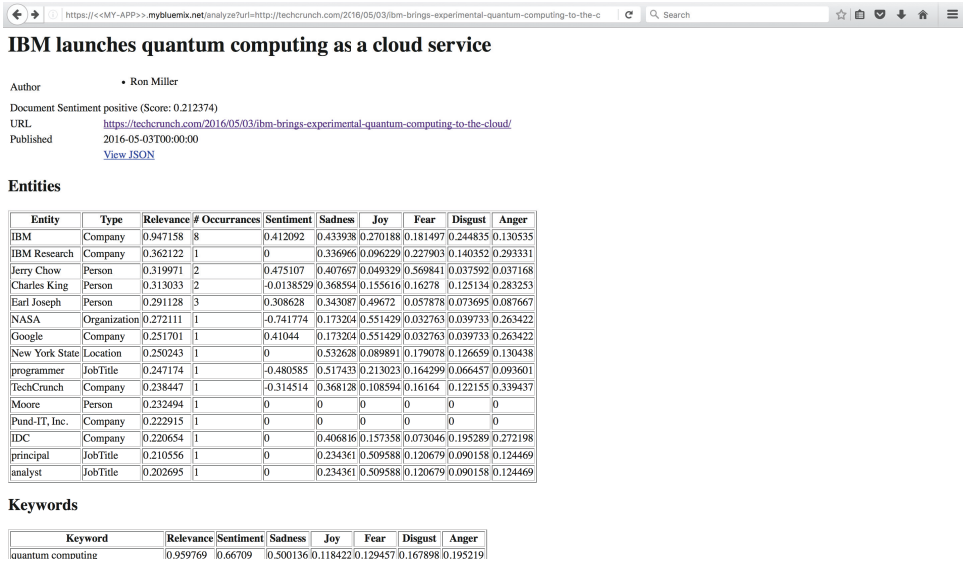


6. When both stages pass, your application has been deployed successfully. Open a new browser tab and visit your application's endpoint, passing in the URL to the webpage of content:

   `http://<<MY-APP>>.mybluemix.net/analyze?url=<<URL-TO-STORY>>`

   - Replace <<MY-APP>> with the host of the Node.js application you created.
   - Replace <<URL-TO-STORY>> with the URL to the content.

7. Depending on the content located at the URL, you may see a list of attributes including concepts, entities, keywords, categories, sentiment, emotion, relations, semantic roles and more mentioned within the text.



https://<<MY-APP>>.mybluemix.net/analyze?url=http://techcrunch.com/2016/05/03/ibm-brings-experimental-quantum-computing-to-the-c

IBM launches quantum computing as a cloud service

Author • Ron Miller

Document Sentiment positive (Score: 0.212374)

URL https://techcrunch.com/2016/05/03/ibm-brings-experimental-quantum-computing-to-the-cloud/

Published 2016-05-03T00:00:00

View JSON

Entities

Entity	Type	Relevance	# Occurrances	Sentiment	Sadness	Joy	Fear	Disgust	Anger
IBM	Company	0.947158	8	0.412092	0.433938	0.270188	0.181497	0.244835	0.130535
IBM Research	Company	0.362122	1	0	0.336966	0.096229	0.227903	0.140352	0.293331
Jerry Chow	Person	0.319971	2	0.475107	0.407657	0.049329	0.569841	0.037592	0.037168
Charles King	Person	0.313033	2	-0.0138529	0.368554	0.155616	0.16278	0.125134	0.283253
Earl Joseph	Person	0.291128	3	0.308628	0.343087	0.49672	0.057878	0.073695	0.087667
NASA	Organization	0.272111	1	-0.741774	0.173204	0.551429	0.032763	0.039733	0.263422
Google	Company	0.251701	1	0.41044	0.173204	0.551429	0.032763	0.039733	0.263422
New York State	Location	0.250243	1	0	0.532628	0.089891	0.179078	0.126659	0.130438
programmer	JobTitle	0.247174	1	-0.480585	0.517433	0.213023	0.164299	0.066457	0.093601
TechCrunch	Company	0.238447	1	-0.314514	0.368128	0.108594	0.16164	0.122155	0.339437
Moore	Person	0.232494	1	0	0	0	0	0	0
Pund-IT, Inc.	Company	0.222915	1	0	0	0	0	0	0
IDC	Company	0.220654	1	0	0.406816	0.157358	0.073046	0.195289	0.272198
principal	JobTitle	0.210556	1	0	0.234361	0.509588	0.120679	0.090158	0.124469
analyst	JobTitle	0.202695	1	0	0.234361	0.509588	0.120679	0.090158	0.124469

Keywords

Keyword	Relevance	Sentiment	Sadness	Joy	Fear	Disgust	Anger
quantum computing	0.959769	0.66709	0.500136	0.118422	0.129457	0.167898	0.195219

8. To see the JSON representation of the content, insert `format=json` in the URL query string.

   `http://<<MY-APP>>.mybluemix.net/analyze?`**`format=json`**`&url=<<URL-TO-STORY>>`

https://<<MY-APP>>.mybluemix.net/analyze?format=json&url=http://techcrunch.com/2016/05/03/ibm-brings-experimental-quantum-computing

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9. Experiment by disabling some of the features in the API call located in the file named `app.js`, to see how the results change. You can also modify the HTML results in the file named `templates/analyze.html`. Try analyzing other URLs and see what results are returned.