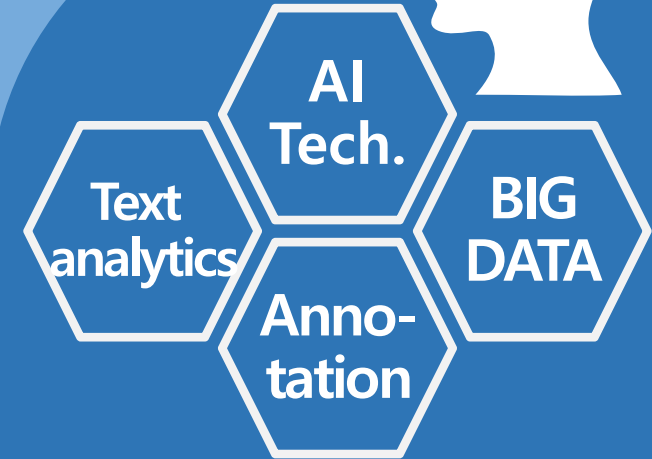


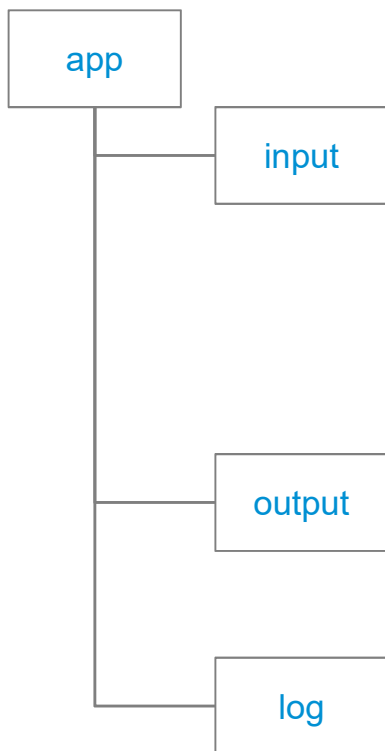
# Unsupervised Anomaly Detection Guide



# IoT Edge Module Guide

## • Module description and set-up

- Our unsupervised machine learning model is built to analyze pattern of sensing data. It cluster data to group with similar patterns.
- We skip the processes such as collect from sensor, data refining or transforming... etc. and only the model running process is built in the module.
- So the module is working with csv files and the structure of the module like below



- Input directory is for the csv files to run model. The files are moved to output directory after the model finished running
- When the input files are moved, the file names will be changed to the format like “Model running start time” + “-” + “Original file name” to make every file unique  
For example, the input file name is “test\_data.csv” then it will be changed to “20190515-083000-test\_data.csv”
- Output directory is for the result of the model
- After the model run, the model create 2 files. The file “raw-result” is cluster result for every data. and the other file “sum-result” is MDS(Multidimensional scaling) result of each cluster.
- Output directory is for model running logs
- Log file is generated every time the model run

## • Module Description

### - File name rule

Input data file: `yymmdd-hhmmss-[Original Input file Name]`

Output data file : `yymmdd-hhmmss-[Original Input file Name]-sum-result`  
`yymmdd-hhmmss-[Original Input file Name]-raw-result`

### - Example

 `190513-061034-data_test-sum-result.csv`

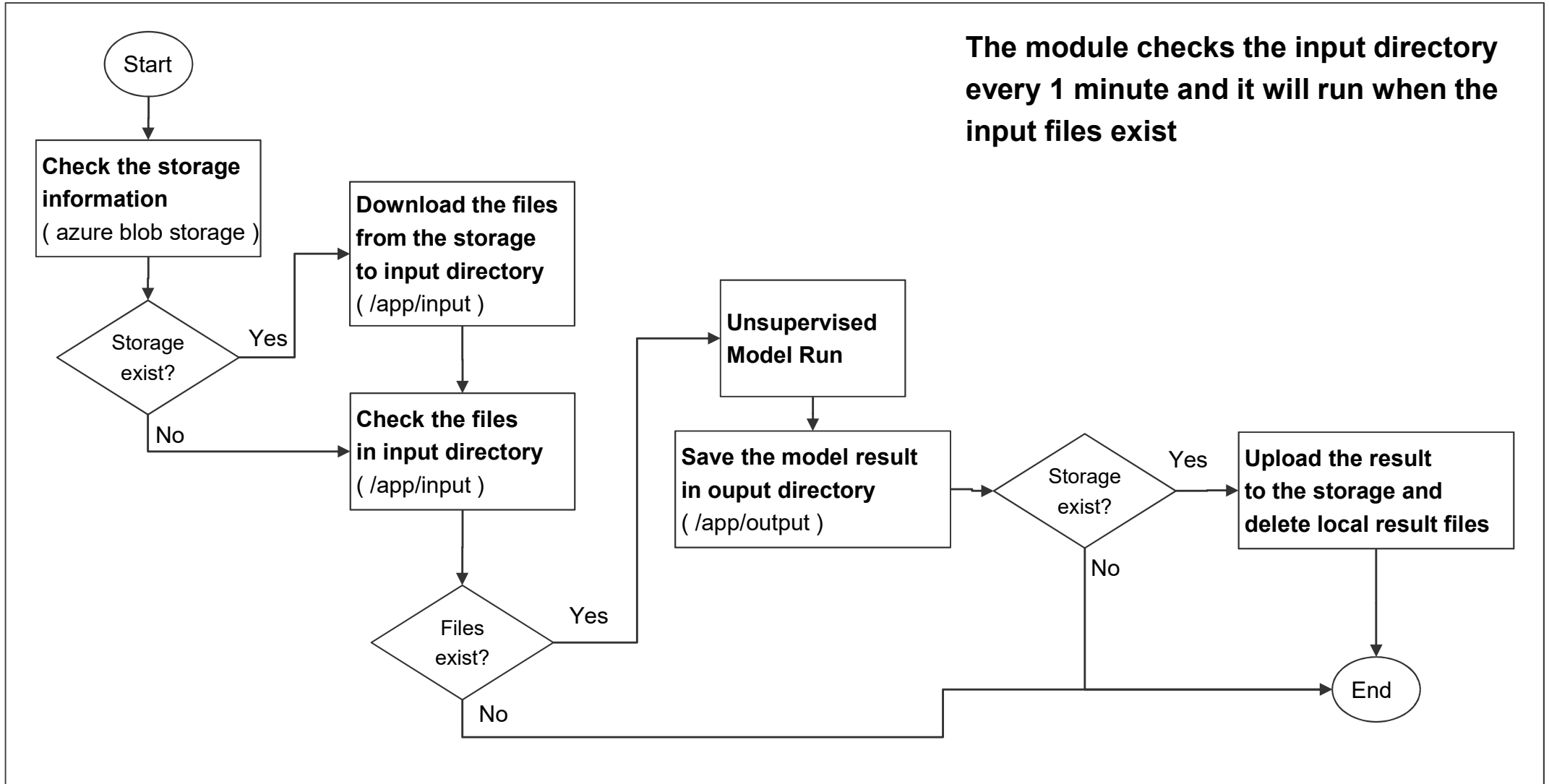
 `190513-061034-data_test-raw-result.csv`

 `190513-061034-data_test.csv`

- If you want not to handle input/output files in the edge, you can configure the azure blob storage information in the environment variables.
- More detail to configure it, to see **“How to set the module environment 1 / 2”** guide in this document.
- Otherwise you can handle the files in the edge with using the command like **“sudo docker cp”**

# IoT Edge Module Guide

## Module Workflow



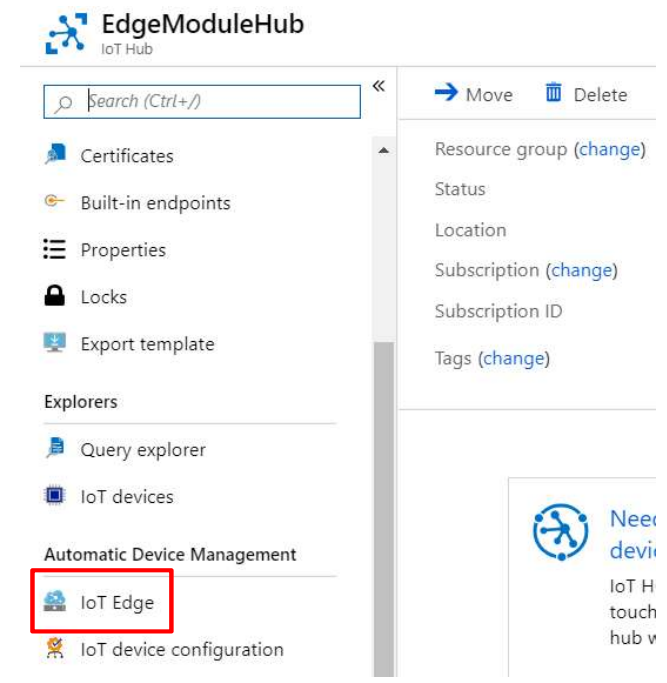
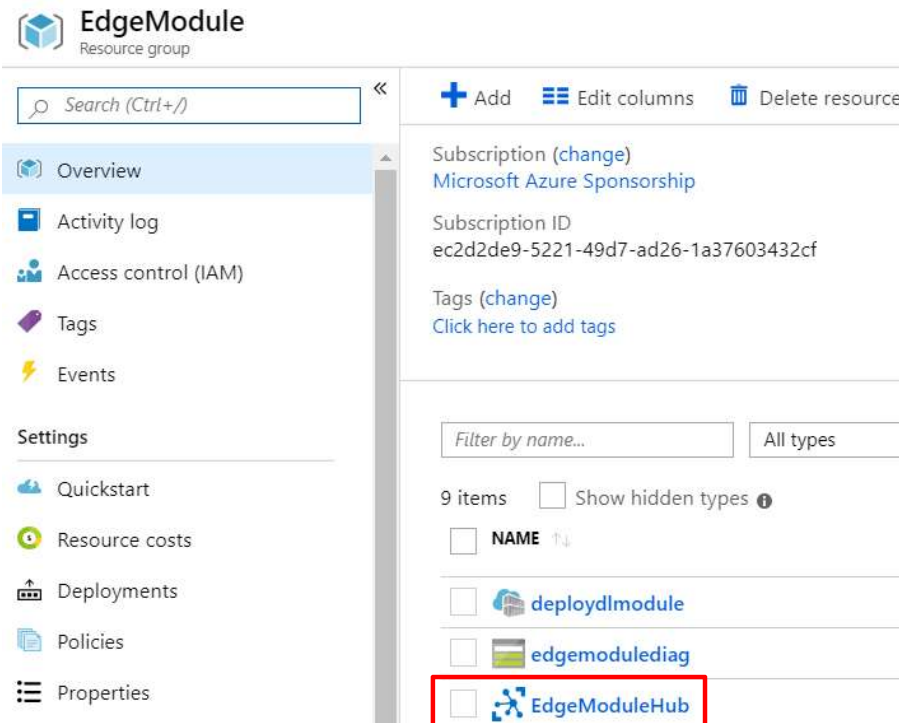
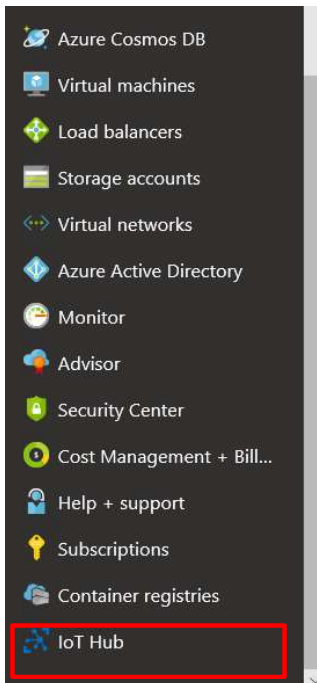
# IoT Edge Module Guide

## • How to set the module environment 1

- There are two ways to set the module environment
  1. Set up in Azure Portal
  2. Set up in deployment file and deploy manually

1. Login Azure Portal(portal.azure.com)


2. Select IoT Hub -> Select you edge hub -> Select your IoT Edge in Automatic Device Management



# IoT Edge Module Guide

- How to set the module environment 1
- 3. Select your IoT edge device
- 4. Click 'Set modules' button on the top

IoT Edge devices [IoT Edge deployments](#)


 IoT Edge devices




+ × Field:  Operate:


+ Add new clause


**Query devices**


<input type="checkbox"/>	DEVICE ID	RUNTIME RESPONSE	101
<input checked="" type="checkbox"/>	EdgeModuleDev	500 - An error occurred in the IoT E...	3
<input type="checkbox"/>	gpu-device	406 - The device is offline or not se...	3


 **Device details**  
EdgeModuleDev


 Save ** Set modules**  Man

Device Id 

Primary key 

Secondary key 

Connection string (primary key) 

Connection string (secondary key) 

# IoT Edge Module Guide

- How to set the module environment 1
5. Click BRModule 'Configure' in Deployment Modules

## Deployment Modules

 Add  Delete

<input type="checkbox"/>	NAME	DESIRED STATUS	
	BRModule	running	<a href="#">Configure</a>

# IoT Edge Module Guide

- How to set the module environment 1

6. Add environment variables with Name-Value pair like below and save

\* Name

\* Image URI ⓘ

Environment Variables ⓘ

NAME	VALUE
<input type="text" value="container_name"/>	<input type="text"/>
<input type="text" value="account_key"/>	<input type="text"/>
<input type="text" value="account_name"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

Container Create Options ⓘ

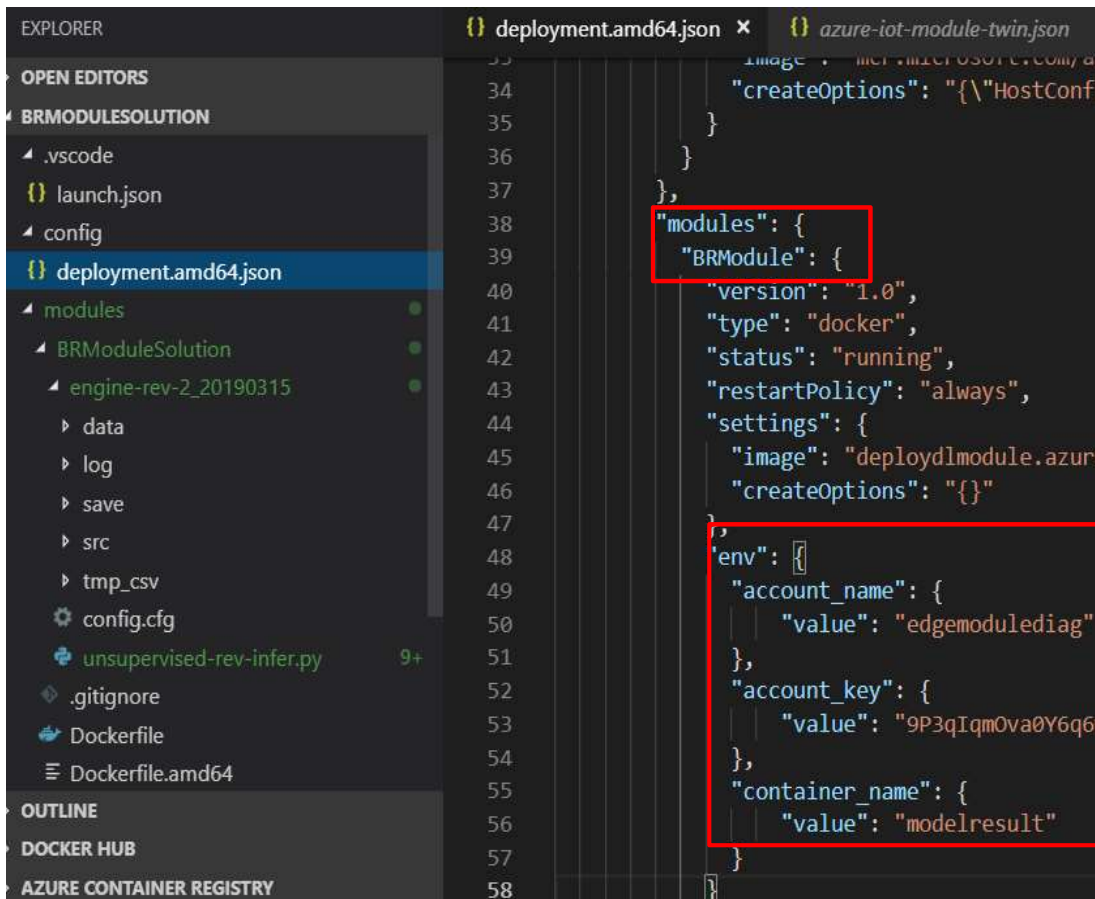
Name	Value
account_name	Your storage account name
account_key	Your storage account key
container_name	Your blob container name



# IoT Edge Module Guide

- How to set the module environment 2

- Add Environment Parameter in deployment json file like below and deploy manually



```
EXPLORER
BRMODULESOLUTION
├── .vscode
├── launch.json
├── config
├── deployment.amd64.json
├── modules
│   └── BRModuleSolution
│       └── engine-rev-2_20190315
│           ├── data
│           ├── log
│           ├── save
│           ├── src
│           ├── tmp_csv
│           ├── config.cfg
│           ├── unsupervised-rev-infer.py
│           ├── .gitignore
│           ├── Dockerfile
│           └── Dockerfile.amd64
├── OUTLINE
├── DOCKER HUB
└── AZURE CONTAINER REGISTRY

deployment.amd64.json
33
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azure-iot-module-twin.json
image: mcr.microsoft.com/az
"createOptions": {"HostConfi

"modules": {
  "BRModule": {
    "version": "1.0",
    "type": "docker",
    "status": "running",
    "restartPolicy": "always",
    "settings": {
      "image": "deploydmodule.azure
      "createOptions": "{}"
    }
  },
  "env": {
    "account_name": {
      "value": "edgemoleddiag"
    },
    "account_key": {
      "value": "9P3qIqm0va0Y6q6v
    },
    "container_name": {
      "value": "modelresult"
    }
  }
}
```

```
"env": {
  "account_name": {
    "value": "your storage account name"
  },
  "account_key": {
    "value": "your storage account key"
  },
  "container_name": {
    "value": "your blob storage container"
  }
}
```