Configuration Manual

MSc Research Project
Msc in cloud Computing

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Project Submission Sheet
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Configuration Manual

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1 Jupyter Notebook for machine Learning model

Jupyter Notebook for machine Learning model

Local Environment:

Installation:

- **Install Python:** Make sure Python is installed on your local machine.
- **Install Jupyter Notebook:** Use **pip install jupyter** to install Jupyter Notebook.

Launch Jupyter Notebook:

- Open a terminal or command prompt.
- Navigate to the directory where you want to store your notebooks.
- Run the command **jupyter notebook** to start the local server.

Accessing Jupyter:

- Open a web browser and go to **http://localhost:8888**.
- The Jupyter Dashboard will be accessible, allowing you to create, open, and manage notebooks.

Cloud Environment (Assuming you are using a popular cloud platform like AWS, Azure, or Google Cloud):

Cloud Service Setup:

- Create an account on your chosen cloud platform.
- Set up a virtual machine (VM) instance. Ensure it has Python installed.
- SSH Access (if applicable): If using SSH to connect to the cloud VM, ensure you have the necessary credentials.

Install Jupyter on Cloud:

- Connect to your cloud VM.
- Install Jupyter Notebook using **pip install jupyter**.

Configure Firewall Rules (if necessary):

- Adjust firewall rules to allow access to the Jupyter Notebook port (default is 8888).
- Launch Jupyter on Cloud:
- Start Jupyter Notebook on the cloud VM using **jupyter notebook –ip=0.0.0.0 –no-browser –port=8888**
- Obtain the public IP address of your cloud VM.

In your local browser, navigate to **http://¡cloud-vm-ip¿:8888**

Machine Learning Code:

- Goto code directory there is **Machine learning code** dir
- Upload all the code over there with CSV file
- And start your notebook for get the result of machine learning code. Codecademy (2020)

2 Serverless Express.js Application on AWS Lambda

Prerequisites:

- AWS Account: Ensure you have an AWS account set up.
- AWS CLI: Install and configure the AWS CLI on your local machine. (2021)
- Node.js and npm: Make sure Node.js and npm are installed on your machine.
- Serverless Framework: Install the Serverless Framework globally using npm install -g serverless. (2018)

Deployment Steps:

- Clone Project: Clone folder in loacal machine folder name Microservices Serverless Express.js project from folder.
- Navigate to Project Directory: Open a terminal and navigate to the directory containing Serverless Framework project.
- Install Dependencies: Run npm install to install the required Node.js dependencies.
- Configure serverless.yml: (2020)
  - Review and customize the serverless.yml file:
    - Set the service name, runtime, memorySize, timeout, stage, and region.
    - Adjust the function configuration as needed.
- Deploy to AWS Lambda: Run serverless deploy to package and deploy Express.js application to AWS Lambda.
- Access Your API Gateway URL: After deployment, note the API Gateway URL provided in the output. It should look like: https://xxxxxxxxxx.execute-api.sa-east-1.amazonaws.com/production.

3 AWS SDK Node.js Application Configuration Manual

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Project structure aws-sdk

- index.js
- index.html
- server.js
- node_modules/
- package.json

Node.js and npm: Make sure you have Node.js and npm installed on your machine. If not, you can download them from the official website: Node.js Downloads. (2016)

Install Dependencies:

- Open a terminal and navigate to project directory.
- Run the following command to install the necessary dependencies:
- **npm install**

Set up the AWS SDK with your credentials and desired configuration Goodman (2011)

- Add your credentials in server.js file
- aws access key
- aws secret key.

Start the node server

- Run npm start in your terminal to start the server
- Server will start in on port http://localhost:3000/ or this will be visible on your terminal which port you have to access.

Update the concurrency of lambda function

- First check how much cpu utilization is show in application if its low check the concurrency using index.js file
- Run node index.js file to check concurrency of current lambda
- change accoding to your use the concurrency Reijn (2020) of lambda function. Now you can able to auto-scale the lambda function using aws-sdk and index.js file.
  Note:- aws-sdk is the folder name.

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