

Big Data and Intelligent Analytics

Spring Semester 2022

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Assignment 3: Implementing Nowcasting Intelligent System

In this assignment, you will work on implementing the design of the nowcasting system.

Preparation:

Review the codebase for:

- <https://github.com/gretelai/gretel-blueprints>
- <https://github.com/gretelai/gretel-python-client>

Blog + Video:

<https://gretel.ai/blog/walkthrough-create-synthetic-data-from-a-dataframe-or-csv>

Run this tutorial:

https://colab.research.google.com/github/gretelai/gretel-blueprints/blob/main/docs/notebooks/create_synthetic_data_from_a_dataframe_or_csv.ipynb

Case:

Now your team is gearing up to build an MVP (Minimum viable product) to demonstrate how the model can be accessed as a service. Your clients tell you they need to see three things:

1. A python client to access the API (See <https://github.com/gretelai/gretel-python-client> for example)
2. A design of blueprint for passing parameters (See <https://github.com/gretelai/gretel-blueprints> for example)

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3. The implementation of the API using Fast API including generation of API keys
 4. A Google colab notebook to illustrate the use of the API (See https://colab.research.google.com/github/gretelai/gretel-blueprints/blob/main/docs/notebooks/create_synthetic_data_from_a_dataframe_or_csv.ipynb for example)

Tasks:

Part 1: Design the Client and parameter file

1. Get familiar with the Gretel design and run the tutorials

Part 2: Designing the REST API

1. Preparation: Run the FastAPI tutorial shared on Canvas
2. The goal of this part is to implement a REST API to execute ONE of the models of your choice. The model will take 13 images as input and 12 images as output. But the end user won't pass the actual images but will pass references that will be used by the backend to look for the input images.
3. Design: You will need to design
 - a. The JSON file (Blueprint) you will pass (using CURL or POSTMAN) to execute a model. Make sure you document the blueprint well and add any default values.
 - b. The API - What operations will you support
 - c. Assumptions - Based on the use case (industry/govt etc), write down the assumptions you have for the application
4. Implementation
 - a. Using the data science github template(or you can also see the gretel design). Implement the REST API.
 - b. Deploy this locally (using uvicorn) or on the cloud (<https://fastapi.tiangolo.com/deployment/deta/>)
 - c. Build test cases to illustrate how to use the API
 - d. Write a Jupyter notebook that will illustrate how to invoke this api

Deliverables (Due Mar 11th 11.59am):

1. A 2-5 page report in <https://github.com/googlecode/labs/tools> format to illustrate your understanding of various steps and outcomes

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2. Google Codelabs/Jupyter notebooks that will interact with the Rest api
 3. Github with
 - a. Links to the notebook and any other supporting files
 - b. You will be given 10 minutes to present your analysis in class