Step 1: create a project in gcp console - VidSynth ——— project id vidsynth

Step 2: enable these APIs
        Cloud Run API (to run your 5 services)
        Cloud Composer API (to run Airflow)
        Artifact Registry API (to store your Docker images)
        Cloud Build API (to build your images)

Step 3: install cloud client so that you can build and deploy each service locally

Step 4: create a storage bucket - vidsynth-models
        "gcloud storage buckets create gs://vidsynth-models —location=us-central1"

4.1 check the llm_service folder for download_model.py file. Execute it inside llm_service folder.

4.2 you see a folder named model_dump in the llm_service folder, you now have to upload it to the bucket.
        "gcloud storage cp -r model_dump/* gs://vidsynth-models-ganapriya/model/"

4.3 verify the gcp bucket if it has all files inside the model folder. Then delete the model_dump folder in your local machine

Step 5: build and deploy each service separately

1. read_service
Build - "gcloud builds submit ./read_service --tag gcr.io/YOUR_PROJ_ID/vidsynth-read "

Deploy - "gcloud run deploy vidsynth-read \
  --image gcr.io/YOUR_PROJ_ID/vidsynth-read \
  --platform managed \
  --region us-central1 \
  —allow-unauthenticated"

update your project id

2. preprocess_service
Build - "gcloud builds submit ./preprocess_service --tag gcr.io/YOUR_PROJ_ID/vidsynth-preprocess"

Deploy - "gcloud run deploy vidsynth-preprocess \
  --image gcr.io/YOUR_PROJECT_ID/vidsynth-preprocess \
  --platform managed \
  --region us-central1 \
  --allow-unauthenticated \
  --set-env-vars YOUTUBE_API_KEY="YOUR_API_KEy"

3. validate_service
Build - "gcloud builds submit ./validate_service --tag gcr.io/YOUR_PROJ_ID/vidsynth-validate"

Deploy - "gcloud run deploy vidsynth-validate \
  --image gcr.io/YOUR_PROJ_ID/vidsynth-validate \
  --platform managed \
  --region us-central1 \
  —allow-unauthenticated"

4. push_service
Build - "gcloud builds submit ./push_service --tag gcr.io/YOUR_PROJ_ID/vidsynth-push"

Deploy - "gcloud run deploy vidsynth-push \
  --image gcr.io/YOUR_PROJ_ID/vidsynth-push \
  --platform managed \
  --region us-central1 \
  —allow-unauthenticated"

5. llm_service (at last since it's the hugest one to build0
Build - "gcloud builds submit ./llm_service --tag gcr.io/YOUR_PROJ_ID/vidsynth-llm"

Deploy - "gcloud run deploy vidsynth-llm \
  --image gcr.io/YOUR_PROJ_ID/vidsynth-llm \
  --platform managed \
  --region us-central1 \
  --allow-unauthenticated \
  --memory 4Gi \
  --cpu 2 \
  --set-env-vars GCS_BUCKET_NAME="YOUR_BUCKET_NAME"

Step 6: After all these builds and deployments, for each service you get a url upload it to the dag file in the same format as of now.

Go to cloud composer —> create a composer2 environment as it is cost-effective, can surely try composer3 if you want (takes around 30-40mins to build) —> once it is built you can see the dag folder inside it, open the folder and upload the dag file. It takes 1min to update —> now open the airflow webserver

I have attached a screenshot for you to get an idea.
Then trigger the dag and you are good to go

Composer / Environments

Environments

Create ▾   ↻ Refresh   🗑 Delete

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	State	Name ↑	Location	Composer version	Airflow version	Creation time	Update time	Airflow webserver	DAG list	Logs	DAGs folder	Labels
☐	✅	vidsynth-airflow	us-central1	2.15.3	2.10.5	11/19/25, 10:31 AM	11/19/25, 11:04 AM	Airflow ☑	☰ DAGs	☰ Logs	📁 DAGs	None