

1. APIs #1 (Vision, Speech, Translate, Natural Language APIs)

- No screenshots or observations

2. IAM service account setup

- No screenshots or observations

3. Vision

Show the output for your lab notebook

```
(env) codd@cloudshell:~/python-vision/samples/snippets/detect (cs356-w21-branden-codd) $ python3 detect.py labels-uri gs://ml-api-codelab/birds.jpg
Labels:
Bird
Ratite
Cloud
Sky
Plant
Beak
Green
Neck
Casuariformes
Ostrich
(env) codd@cloudshell:~/python-vision/samples/snippets/detect (cs356-w21-branden-codd) $
```

Answer the following questions:

- What is the name of the function?
 - detect_labels
- What type of Vision client is instantiated in it?
 - imageAnnotatorClient
- What method is invoked in the Vision client to perform the detection?
 - label_detection
- What is the name of the attribute in the response object that contains the results we seek?
 - Label_annotations

Logo i used:

https://upload.wikimedia.org/wikipedia/en/4/43/Souther_Oregon_University_seal.png

- Take a screenshot of the output for the above commands

```
(env) codd@cloudshell:~/python-vision/samples/snippets/detect (cs356-w21-branden-codd) $ python3 detect.py logos sou.png
Logos:
Southern Oregon University
(env) codd@cloudshell:~/python-vision/samples/snippets/detect (cs356-w21-branden-codd) $
```

- What method is invoked in the Vision client to perform the detection?
 - Detect_logos

4. Speech

- Show the output for your lab notebook

```
(env) codd@cloudshell:~/python-vision/samples/snippets/detect (cs356-w21-branden-codd)$ cd ~/python-speech/samples/snippets
(env) codd@cloudshell:~/python-speech/samples/snippets (cs356-w21-branden-codd)$ python3 transcribe.py resources/audio.raw
Transcript: how old is the Brooklyn Bridge
(env) codd@cloudshell:~/python-speech/samples/snippets (cs356-w21-branden-codd)$
```

Open up `transcribe.py`. Given the arguments of the above command, find the function that is called which handles this particular translation.

Answer the following questions:

- What is the name of the function?
 - `transcribe_file`
- What method is invoked in the Speech client to perform the detection?
 - `Recognize`
- What is the name of the attribute in the response object that contains the results we seek?
 - `alternatives[0].transcript`

5. Translate

Run a detection that returns the English translation of a Chinese sentence.

```
python snippets.py translate-text en '你有沒有帶外套'
```

- Show the output for your lab notebook

```
(env) codd@cloudshell:~/python-translate/samples/snippets (cs356-w21-branden-codd)$ python snippets.py translate-text en '你有沒有帶外套'
Text: 你有沒有帶外套
Translation: Did you bring a jacket
Detected source language: zh-TW
```

Open up `snippets.py`. Given the arguments of the above command, find the function that is called which handles this particular translation.

Answer the following questions:

- What is the name of the function?
 - `translate_text`
- What method is invoked in the Translate client to perform the detection?
 - `translate`
- What is the name of the attribute in the response object that contains the results we seek?

- Translated text

6. Natural Language

- Show the output for your lab notebook

```
(env) codd@cloudshell:~/python-translate/samples/snippets (cs356-w21-branden-oodd)$ python language.py 'homework is awful!'
"homework is awful!" has sentiment=-0.890000011320323
Entities are:
name: homework?
(env) codd@cloudshell:~/python-translate/samples/snippets (cs356-w21-branden-oodd)$ python language.py 'homework is ok'
"homework is ok" has sentiment=0.3000000113203236
Entities are:
name: homework
(env) codd@cloudshell:~/python-translate/samples/snippets (cs356-w21-branden-oodd)$ python language.py 'homework is awesome?'
"homework is awesome?" has sentiment=0.400000003604645
Entities are:
name: homework?
(env) codd@cloudshell:~/python-translate/samples/snippets (cs356-w21-branden-oodd)$ python language.py 'homework is awesome!'
"homework is awesome!" has sentiment=0.8999999761581421
Entities are:
name: homework
(env) codd@cloudshell:~/python-translate/samples/snippets (cs356-w21-branden-oodd)$ python language.py 'The protestors in Oregon put on gas masks and wore yellow t-shirts'
"The protestors in Oregon put on gas masks and wore yellow t-shirts" has sentiment=-0.600000234118573
Entities are:
name: protestors
name: gas masks
name: Oregon
name: t-shirts
(env) codd@cloudshell:~/python-translate/samples/snippets (cs356-w21-branden-oodd)$
```

7. Integration

- No screenshots or observations

8. Code

Examine the code and answer the following questions:

- What is the name of the function that performs the transcription?
 - transcribe_gcs
- What is the name of the function that performs the translation?
 - translate_text
- What is the name of the function that performs the entity analysis on the translation?
 - entities_text
- What is the name of the function that performs the entity analysis on the image?
 - Compare_audio_to_image

9. Test integration

Run the following test. If the program deems them unrelated, then based on the results from the APIs, what must be changed in the program to address this?

```
python3 solution.py de-DE gs://ml-api-codelab/de-ball.wav gs://ml-api-codelab/football.jpg
```

```

codd@cloudshell:~/python-speech/samples/snippets (cs356-w21-branden-codd)$ python3 solution.py de-DE gs://ml-api-codelab/de-ball.wav gs://ml-api-codelab/football.jpg
Transcription: willst du mit uns Fußball spielen
Translation: do you want to play soccer with us?
Entities: ['soccer']
Image labels: ['Soccer', 'Sports equipment', 'Plant', 'Football', 'Playing sports', 'Ball', 'Player', 'Competition event', 'Soccer ball', 'Ball game']
The audio and image do not appear to be related.
codd@cloudshell:~/python-speech/samples/snippets (cs356-w21-branden-codd)$
codd@cloudshell:~/python-speech/samples/snippets (cs356-w21-branden-codd)$

```

- possible issue stems from a difference in football in the west vs the rest of the world.
- We would either need to rename the image from football.jpg to soccer.jpg
- Could also be cap sensitivity

Run the following test. If the program deems them unrelated, then based on the results from the APIs, what must be changed in the program to address this?

```
python3 solution.py tr-TR gs://ml-api-codelab/tr-bike.wav gs://ml-api-codelab/bicycle.jpg
```

```

Transcription: bisikletimi sokağa bırak
Translation: leave my bike on the street
Entities: ['bike', 'street']
Image labels: ['Bicycle', 'Clothing', 'Footwear', 'Tire', 'Wheel', 'Bicycles--Equipment and supplies', 'Land vehicle', 'Shoe', 'Bicycle frame', 'Bicycle wheel']
The audio and image do not appear to be related.
codd@cloudshell:~/python-speech/samples/snippets (cs356-w21-branden-codd)$
codd@cloudshell:~/python-speech/samples/snippets (cs356-w21-branden-codd)$

```

- The issue is the naming, it is unable to distinguish that a bicycle = bike. We would need to rename the image to bike.jpg

Run the following test. If the program deems them unrelated, then based on the results from the APIs, what must be changed in the program to address this?

```
python3 solution.py tr-TR gs://ml-api-codelab/tr-ostrich.wav gs://ml-api-codelab/birds.jpg
```

- (note my result screenshot got deleted and i no longer have the lab up and running)
- it is unable to distinguish that an ostrich is a bird. It is able to tell that they are a group of flightless birds called ratites.
- We would either need to rename the image to ostrich or ratites.
- Could also be an issue with plural vs singular

10. APIs #2 (Video Intelligence API)

- No screenshots or observations

11. Video setup

- No screenshots or observations

12. Video Intelligence labeling script

- No screenshots or observations

13. Video Intelligence

```
coddd@cloudshell:~/python-speech/samples/snippets (cn356-w21-braden-coddl) $ python3 labels.py gs://lab8_3/sample-mp4.mp4
Processing video for label annotations:
Finished processing.
Video label description: rabbits and hares
Label category description: mammal
Segment 0: 0s to 125s
Confidence: 0.3558630811214447

Video label description: nature
Segment 0: 0s to 125s
Confidence: 0.7514047622680664

Video label description: wildlife
Label category description: animal
Segment 0: 0s to 125s
Confidence: 0.49353617429733276

Video label description: hare
Label category description: mammal
Segment 0: 0s to 125s
Confidence: 0.7509928941726685

Video label description: tree
Label category description: plant
Segment 0: 0s to 125s
Confidence: 0.37939736247062683

Video label description: meadow
Label category description: geographical feature
Segment 0: 0s to 125s
Confidence: 0.30849635939598083

Video label description: animal
Segment 0: 0s to 125s
Confidence: 0.879321813583374

Video label description: grassland
Label category description: geographical feature
Segment 0: 0s to 125s
Confidence: 0.5495126843452454

Video label description: rabbit
Label category description: pet
Segment 0: 0s to 125s
Confidence: 0.8341765999794006

Video label description: animation
Segment 0: 0s to 125s
Confidence: 0.452816982192993
```

Answer the following for your lab notebook.

- What are the top 3 labels that the Video Intelligence API associates with the video and what is its confidence in them?
 - Video label description: animal
 - Segment 0: 0s to 125s
 - Confidence: 0.879321813583374
 - Video label description: rabbit
 - Label category description: pet
 - Segment 0: 0s to 125s
 - Confidence: 0.8341765999794006
 - Video label description: nature
 - Segment 0: 0s to 125s
 - Confidence: 0.7514047622680664

Open up `labels.py`. Answer the following questions:

- What is the name of the client class in the package that is used?
 - `videointelligence`
- What method is used in that class to perform the annotation?
 - `Annotate video`

14. APIs #3 (Web site integration)

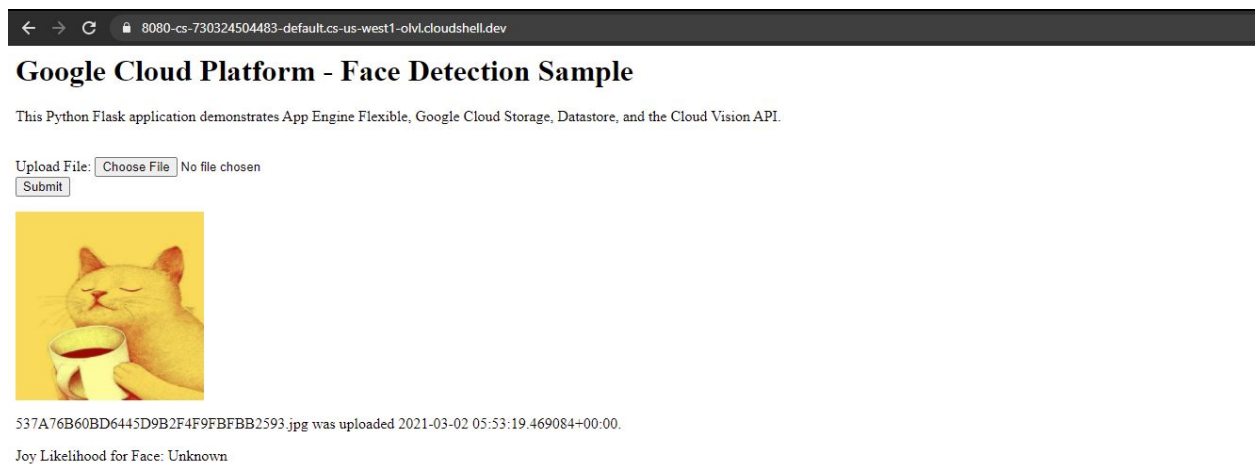
- No screenshots or observations

15. IAM service account setup

- No screenshots or observations

16. Application

- Take a screenshot for your lab notebook that includes the URL.



17. Code

Open `main.py` and view the code for the default route. Answer the following questions:

- What line of code creates the query for previous detections?
 - 39
- What line of code sends the query to Cloud Datastore?
 - 40

Then, view the `upload_photo` route.

- Show the line that retrieves the name of the storage bucket to use.
 - 54
- What form field is used to specify the uploaded photo?
 - file
- Show the line that copies the photo's contents to the storage bucket.

- 58
- What method in Vision's annotation client is used to perform the analysis?
 - face_detection
- What fields are stored in Cloud Datastore for each image?
 - Blob_name
 - storage_public_url
 - Timestamp
 - joy
- What happens at the end of the upload_photo route?
 - Return redirect("/")
 - Returned to the home page