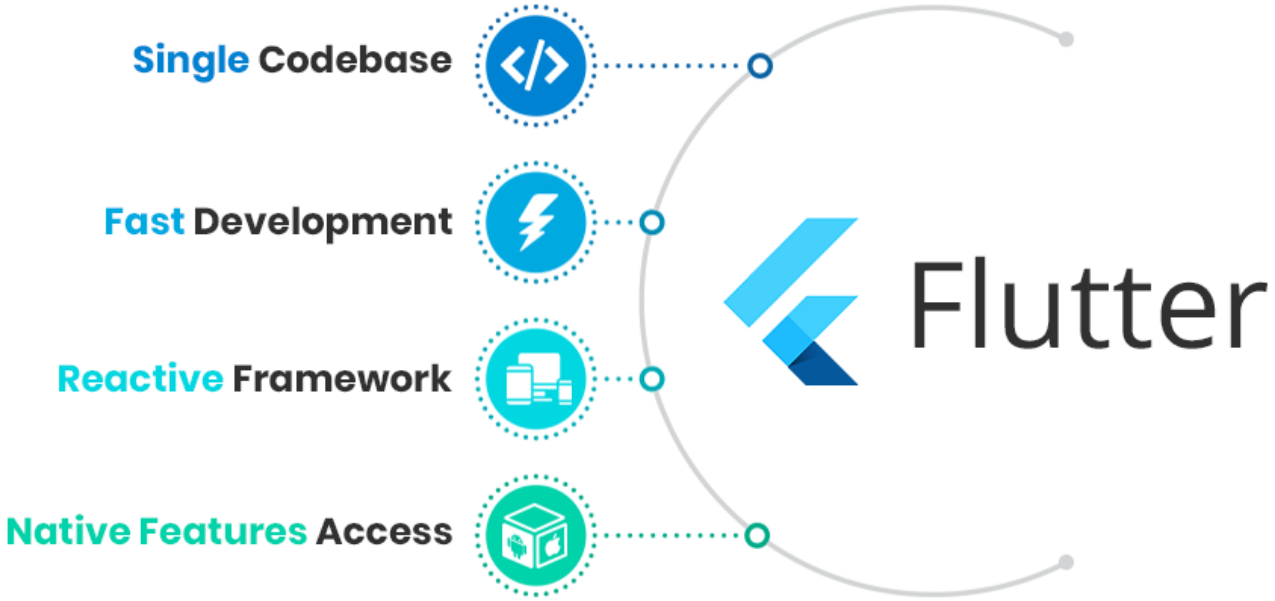
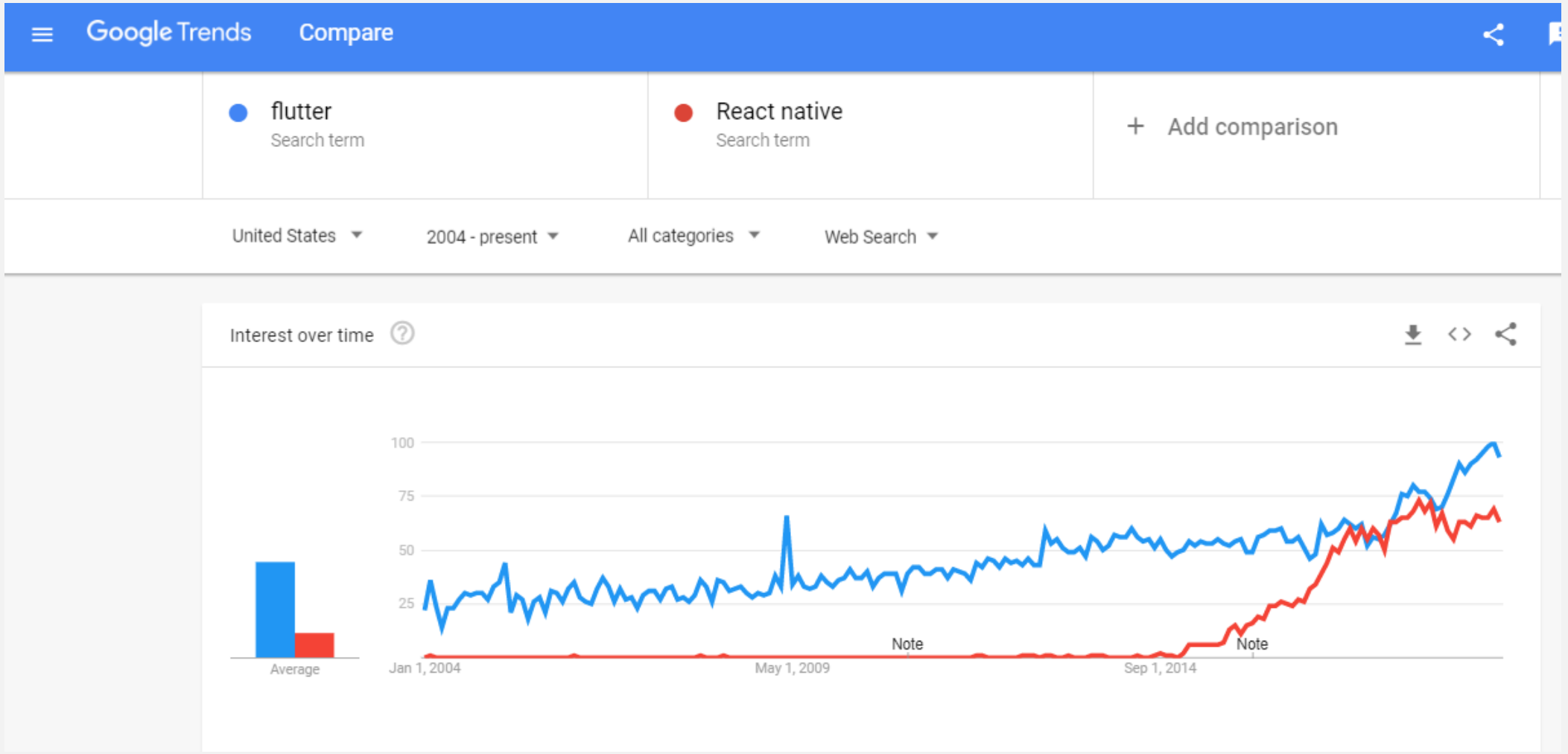


RESEARCH PRESENTATION PP2

Parakrama Thennakoon, Tharindu Rajarathna


Google Trends
Compare
flutter
Search term
React native
Search term
+ Add comparison
United States
2004 - present
All categories
Web Search
Interest over time
100
75
50
25
Note
Note
Average
Jan 1, 2004
May 1, 2009
Sep 1, 2014

Advantages of Flutter

Hot Reload

Fast development

Screen reader

Quick rendering

Cross-platform

Flutter goes native

Open source & free

Themes for Android & iOS

ADVANTAGES OF FLUTTER FRAMEWORK

RESEARCH TIMELINE

June

Deployed cloud functions with Machine Learning models

July

Functions available through Firebase

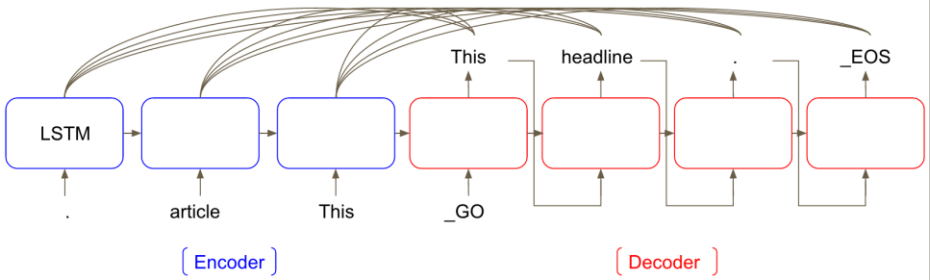
August

Fixes on bugs of integra

September

Integration and Optimizations of main components

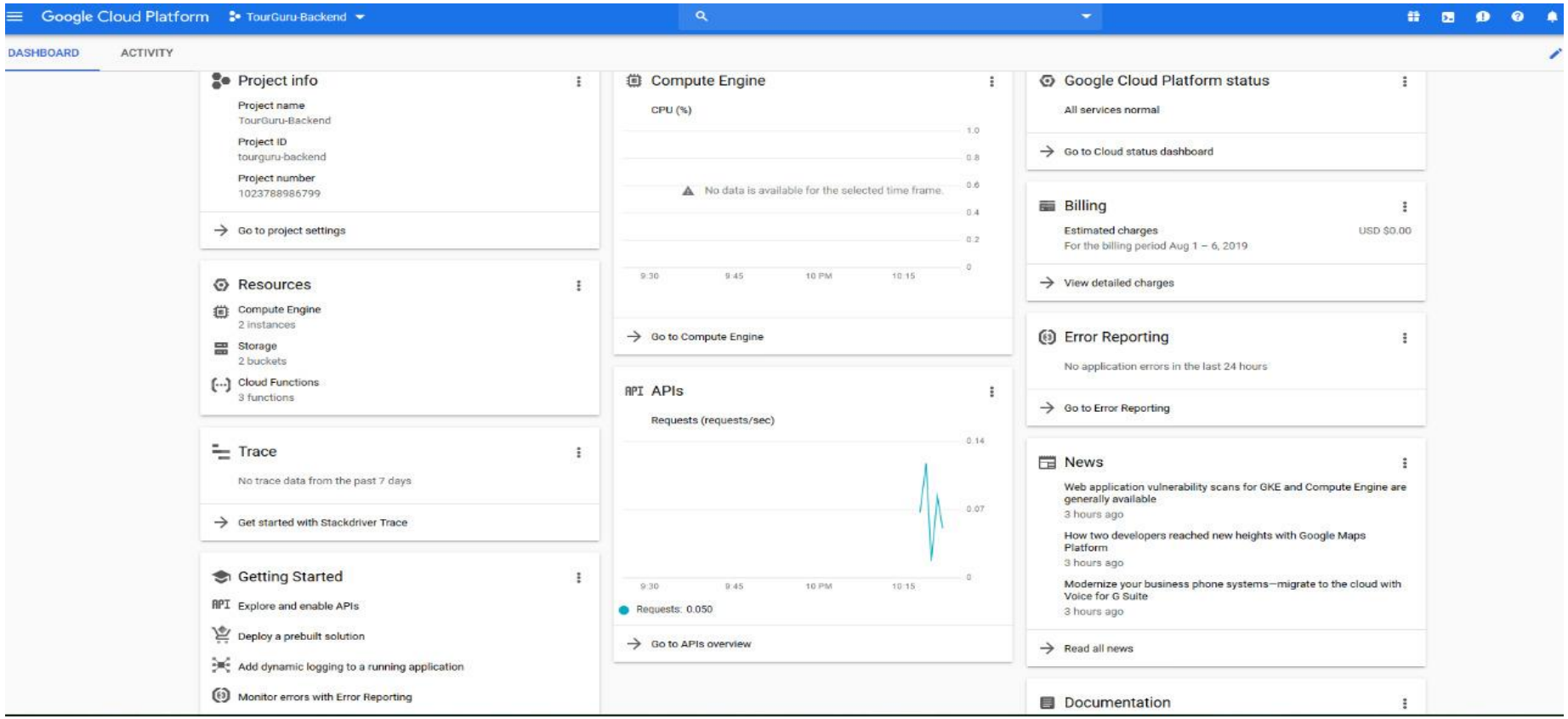
NARRATION ON POI



Machine learning algorithm development through Google Cloud Datalab and CI/CD and delivery through Cloud Build and Firebase.

Deep Learning Encoder-Decoder algorithm for prediction of a summary of textual location data queried in Wikipedia API and fetched from Google Cloud Platform's Places API.

Machine learning algorithm delivers a summarized detail on a POI to the user.

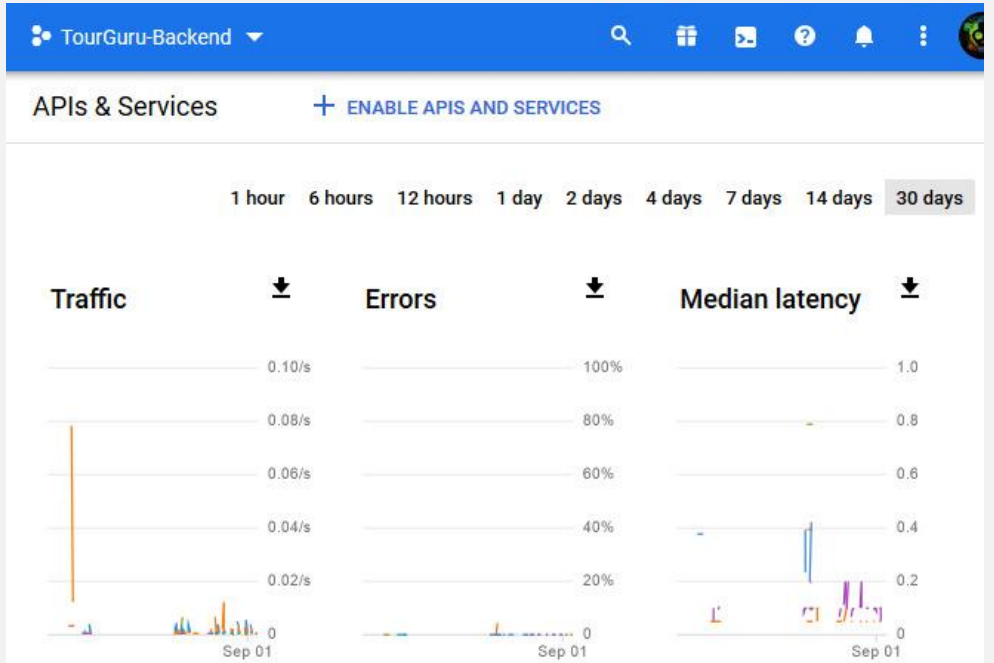


RESULT AND DISCUSSION

Google Cloud Platform deployed Backend overall dashboard. Interface delivers an trace on availability and each invoke as a summary.

RESULT AND DISSCUSSION

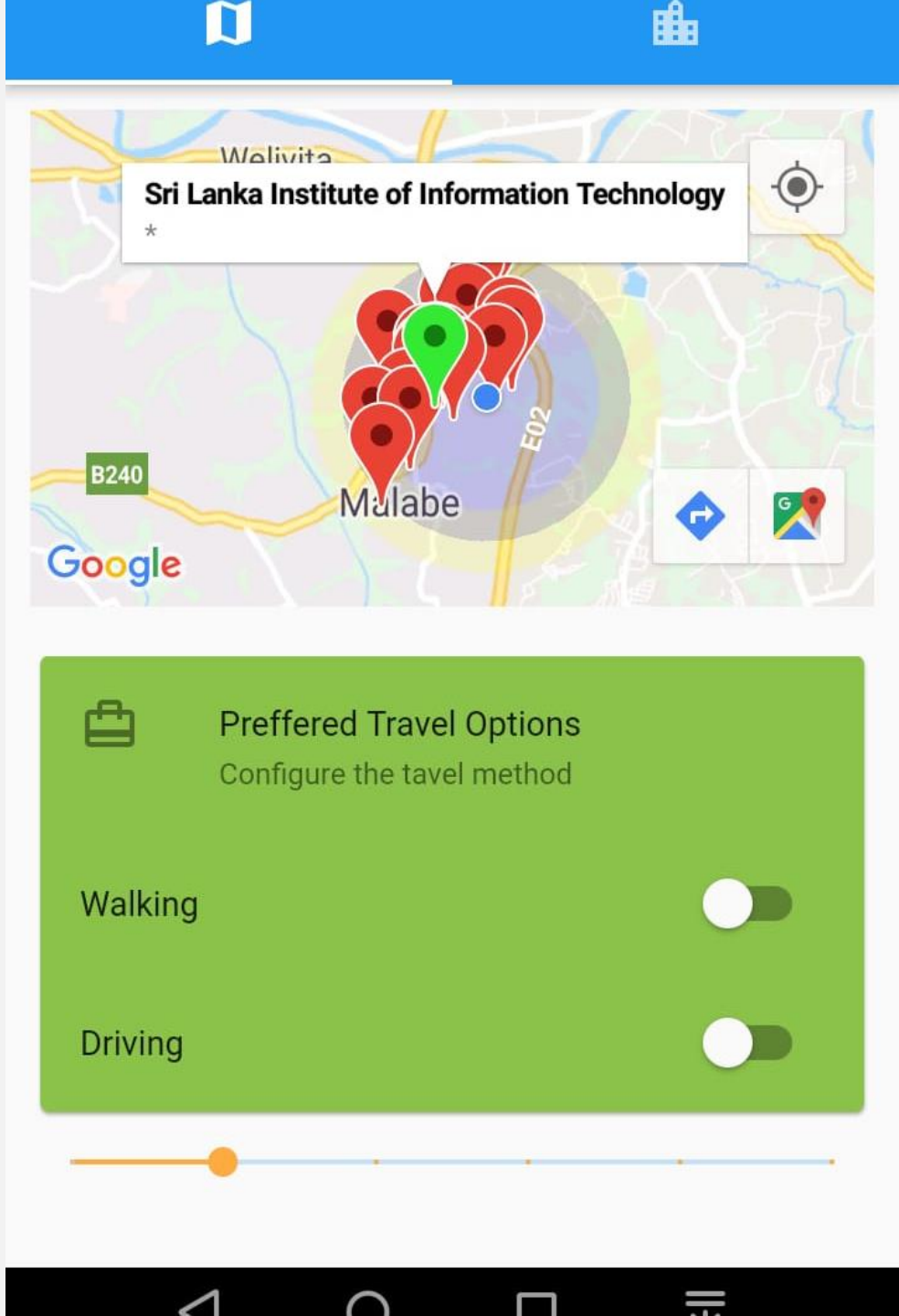
- Each invoke, error log, latency and traffic on the Google Cloud Platform API and Services
- With 589 latency Cloud Machine Learning engine invoked in 75 requests with 4 errors in last 30 days.

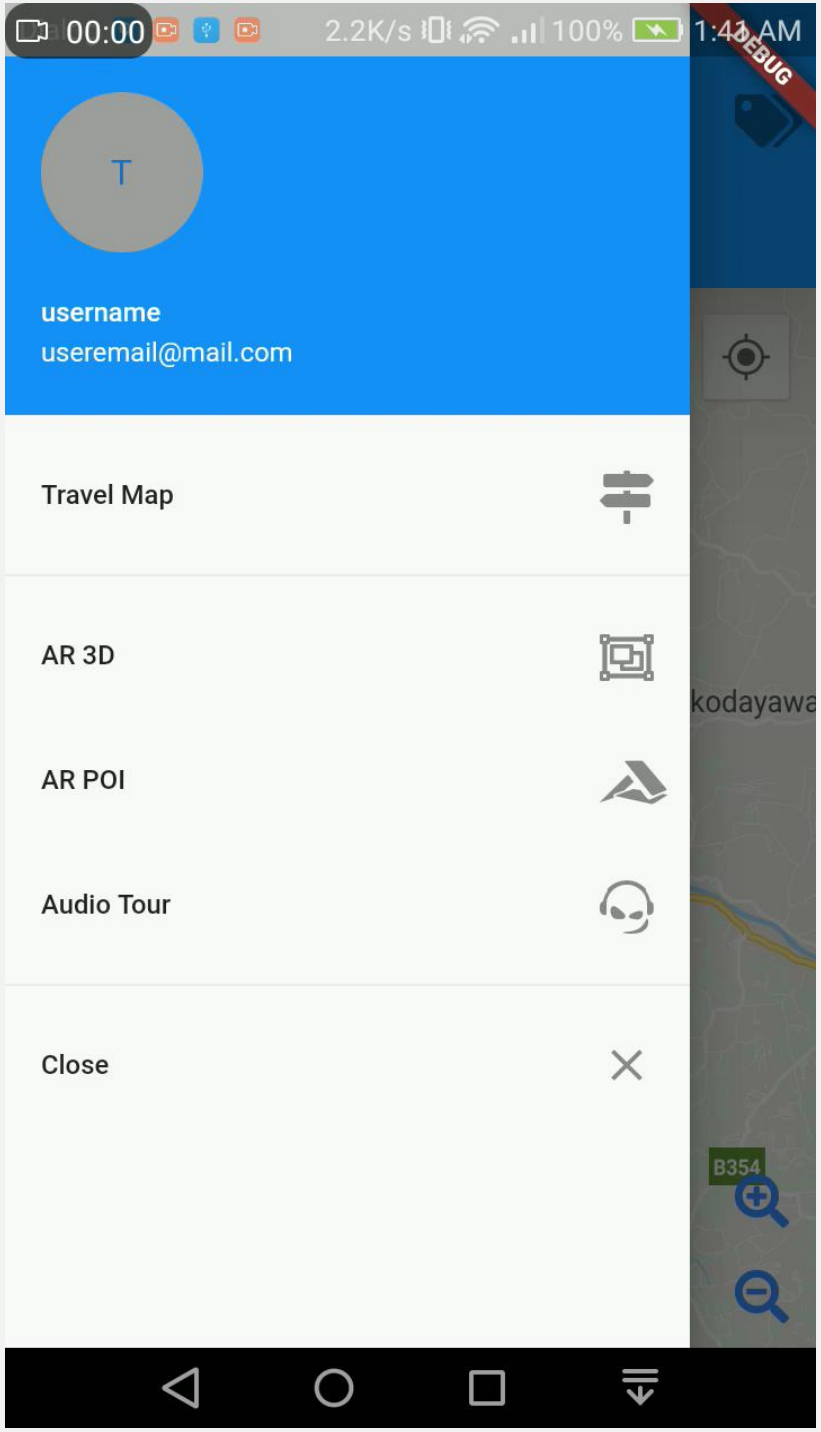


Name	Requests	Errors (%)	Latency, median (ms)	Latency, 95% (ms)
Stackdriver Logging API	626	0	96	192
Cloud Machine Learning Engine	75	4	191	589
Compute Engine API	66	0	227	702
Cloud Functions API	61	0	362	799
Cloud Resource Manager API	23	0	50	93

RESULT AND DISSCUSSION

- This is the implementation of UI on the frontend that delivers the narration on nearby POIs.
- Narration delivers on a list as the nearest location information covers.
- Aims to integrate the streamed location updates and implement
- Optimizing deep learning algorithm optimizing(Dropout, dataset preprocessing etc..) the layers in Recurrent Neural network. Long short term memory(LSTM) encoder involves encoding the input "article" and LSTM decoder, decodes "Summarized/Headline" output.





RESULT AND DISCUSSION

- Video discusses on the execution process of Flutter front-end.
- The actions follows are selection on the component and give specific actions to control the flow of the alert.
- Current dataset narrated based on Google Places API request and pertains with locations name, place types, availability and rating as such data.

CODE

```
final String url =
    "https://maps.googleapis.com/maps/api/place/nearbysearch/json?location=";
final String currentLocationplacesURI= url + _currentPosition.latitude.toString()+
    ","+_currentPosition.longitude.toString()+"&radius=2000&types=point_of_interest&key=AIzaSyBLcIper"
    "mU2uTd2ny81zbPVoWXNwQ8_6JU";

var response = await http.get(currentLocationplacesURI, headers: {"Accept": "application/json"});
//POI Google Places API response
List data = json.decode(response.body)["results"];
```

- Implementation on Google Places API nearby places search request.
- Can be used to create an detailed paragraph
- Current dataset narrated based on Google Places API request is represented on “List data” object.

```
data = np.array([[23, 1, 4]])
model.predict(data)
```

```
array([31.9648])
```

```
data_b = np.array([[23, 0, 0]])
model.predict(data_b)
```

```
array([-8.7915])
```

```
from sklearn.externals import joblib
joblib.dump(model,'model.joblib')
```

```
['model.joblib']
```

```
from firebase_admin import storage
```

```
bucket = storage.bucket(name='tourguru-backend.appspot.com',app=app)
```

```
b = bucket.blob('mlrouteprediction/model.joblib')
b.upload_from_filename(filename='model.joblib')
print('model uploded!')
```

```
model uploded!
```

```
import sys
print(sys.version)
```

```
2.7.15 |Anaconda, Inc.| (default, Oct 10 2018, 21:32:13)
[GCC 7.3.0]
```

MACHINE LEARNING ON GOOGLE'S DATALAB

- Machine learning algorithm continuous build through Cloud Build
- Writes the exported model on Firebase storage relates project associate.

CODE ON BACKEND MACHINE LEARNING MODEL CONTINUOUS DELIVERY

```
// Take the text parameter passed to this HTTP endpoint and insert it into the
// Real time Database under the path /messages/:pushId/original
exports.genNarrativeSummary = functions.https.onRequest(async (req, res) => {

  //take the body of the request
  var body = req.body;
  body["name"] = "6MW28C63+GF";

  const instances = req.body.instances;
  const model = req.body.model;
  const version = req.body.version;

  const {credential} = await googleapis.google.auth.getApplicationDefault();
  const modelName = `projects/tourguru-backend/models/${model}/versions/${version}`;

  const preds = await ml.projects.predict({
    auth:credential,
    name: modelName,
    requestBody: {
      instances
    }
  });

  res.send(JSON.stringify(preds.data));

});
```

- An instance of Firebase functions can be seen as a Machine Learning algorithm execution for prediction delivery
- Compute Engine us-central-a in Google regions
- Model accessed through the bucked which it was exported on

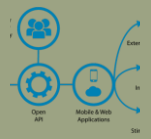
FUTURE WORKS

- To crowd source location information through the system.
- Aims to expand the location based dataset for avoiding overfitting on validation accuracy.

FUTURE WORKS

To crowd source location information through the system.

Aims to expand the location based dataset for avoiding overfitting on validation

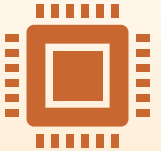


To crowd source location information through the system.

Aims to expand the location based dataset for avoiding overfitting on validation accuracy.

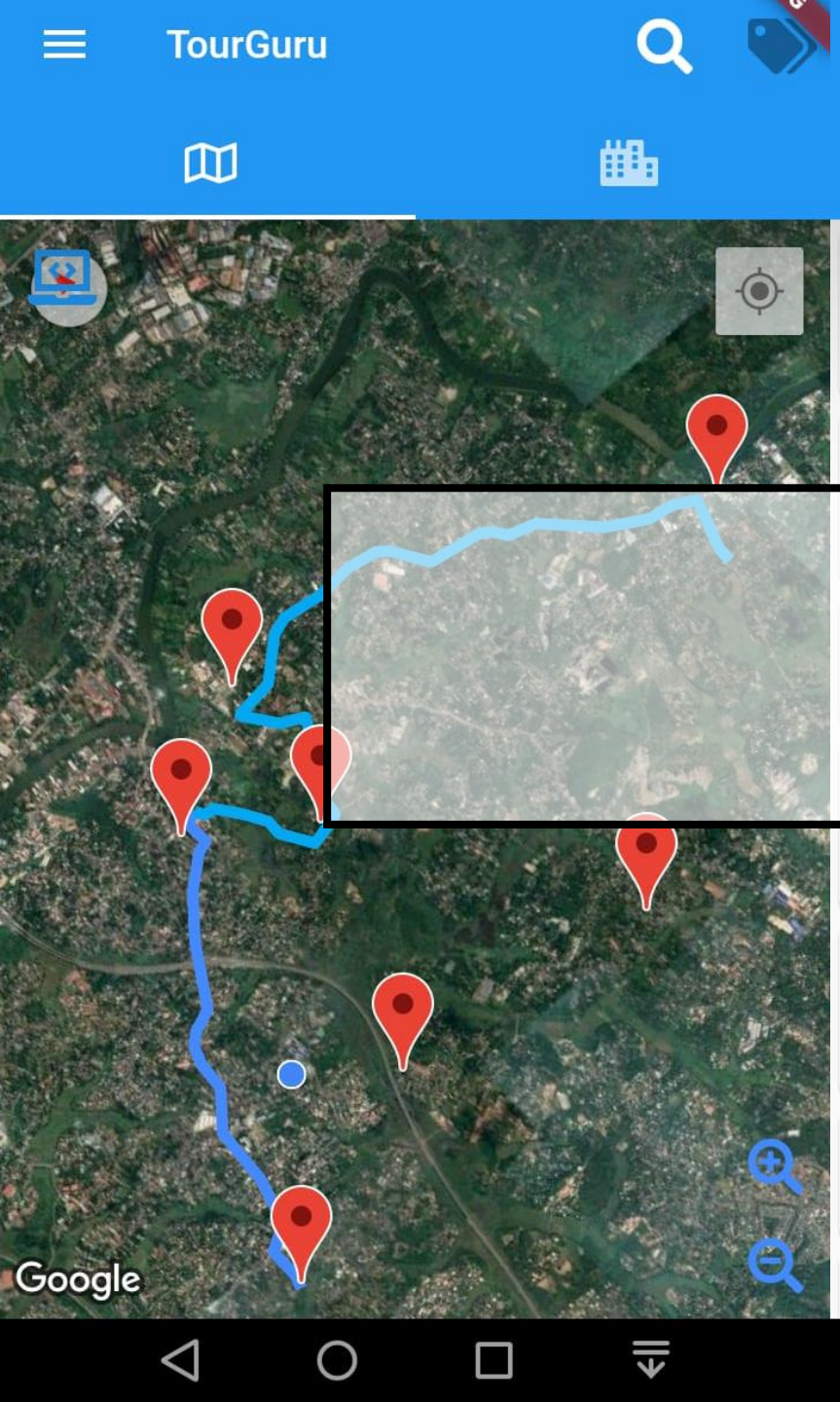
ROUTE MAPPING COMPONENT

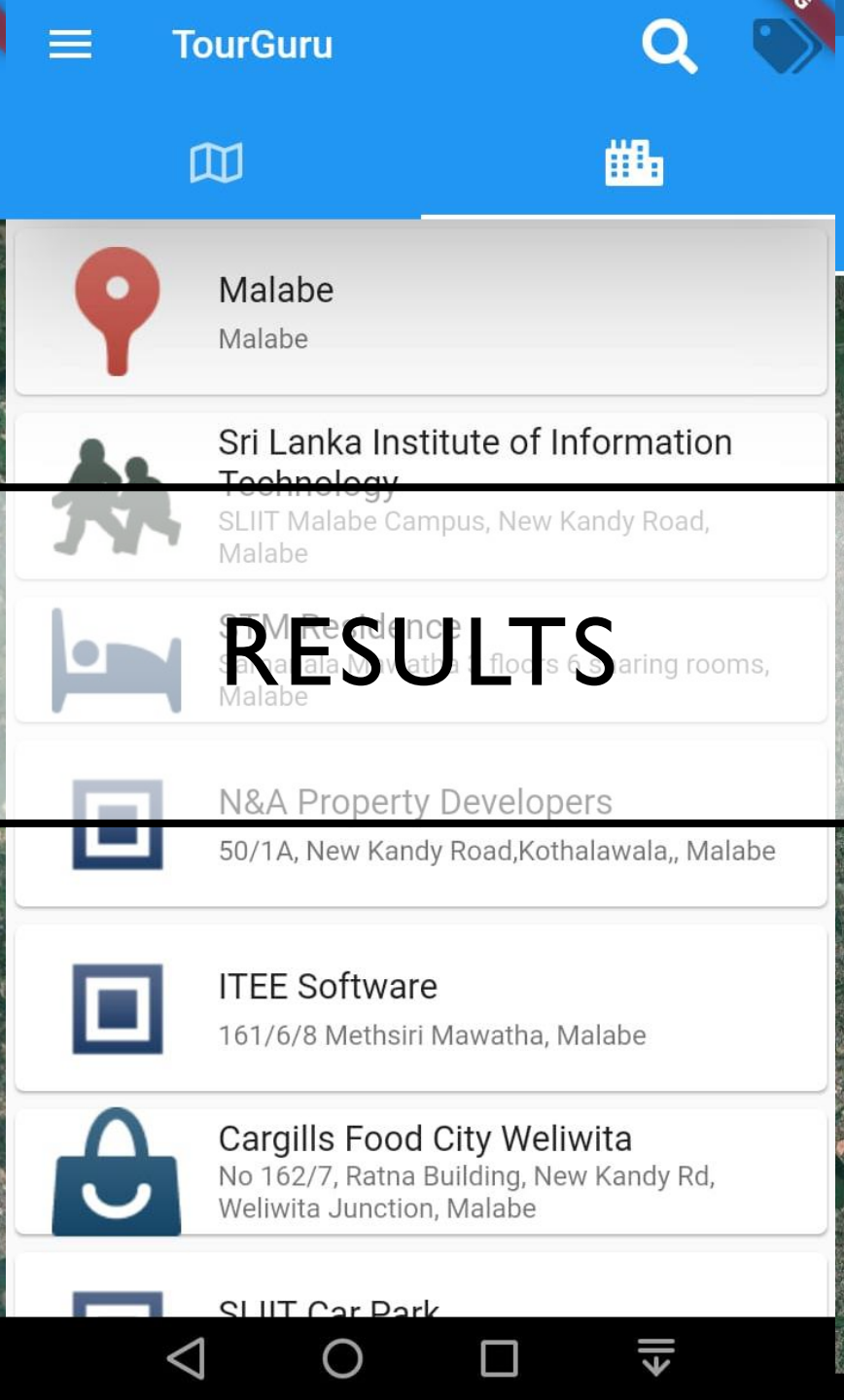
Using Q learning and genetic algorithms predict the best route through waypoints.



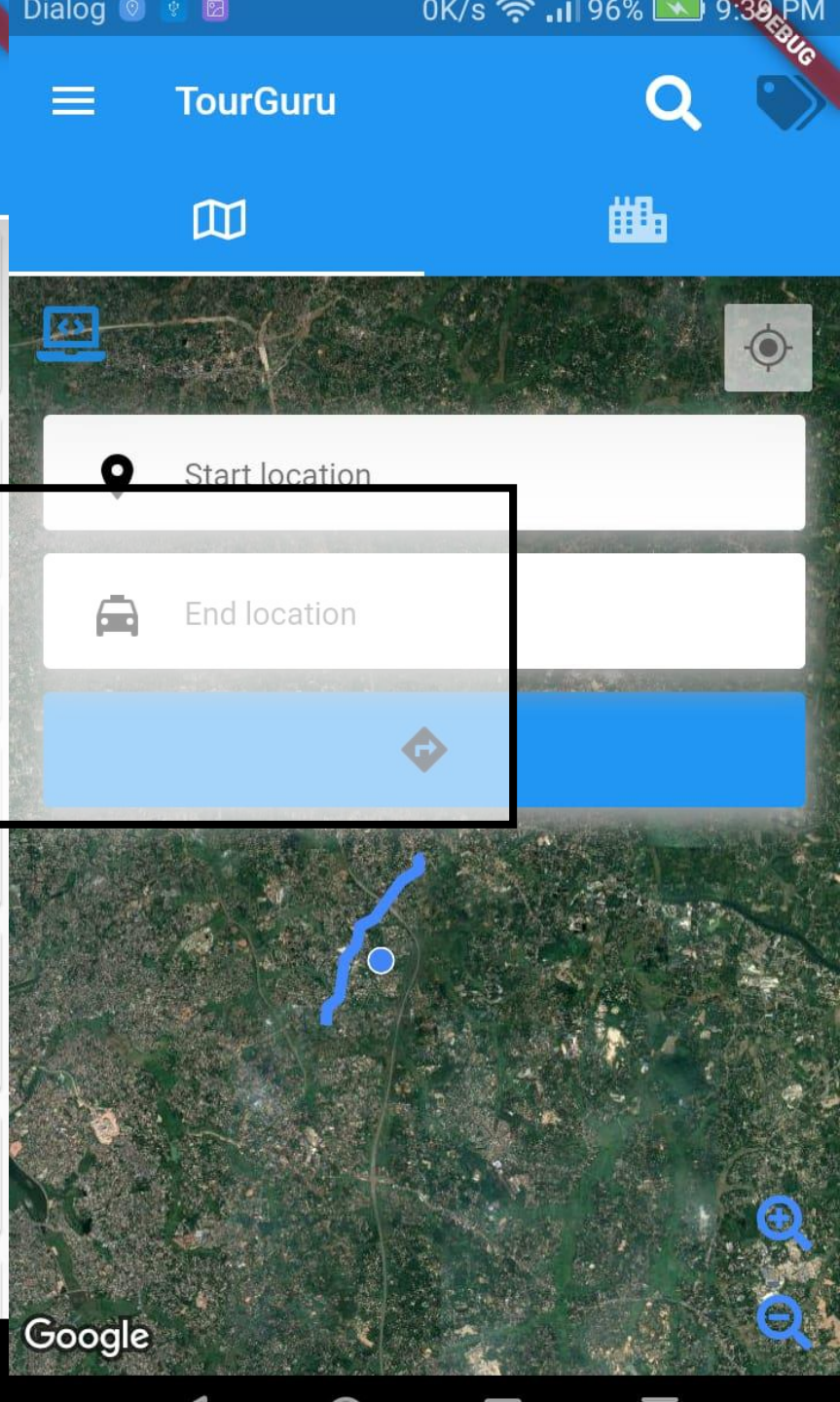
Used machine learning algorithms will be compared for best output.

Get nearby places and their details via google cloud API's.


TourGuru
Google

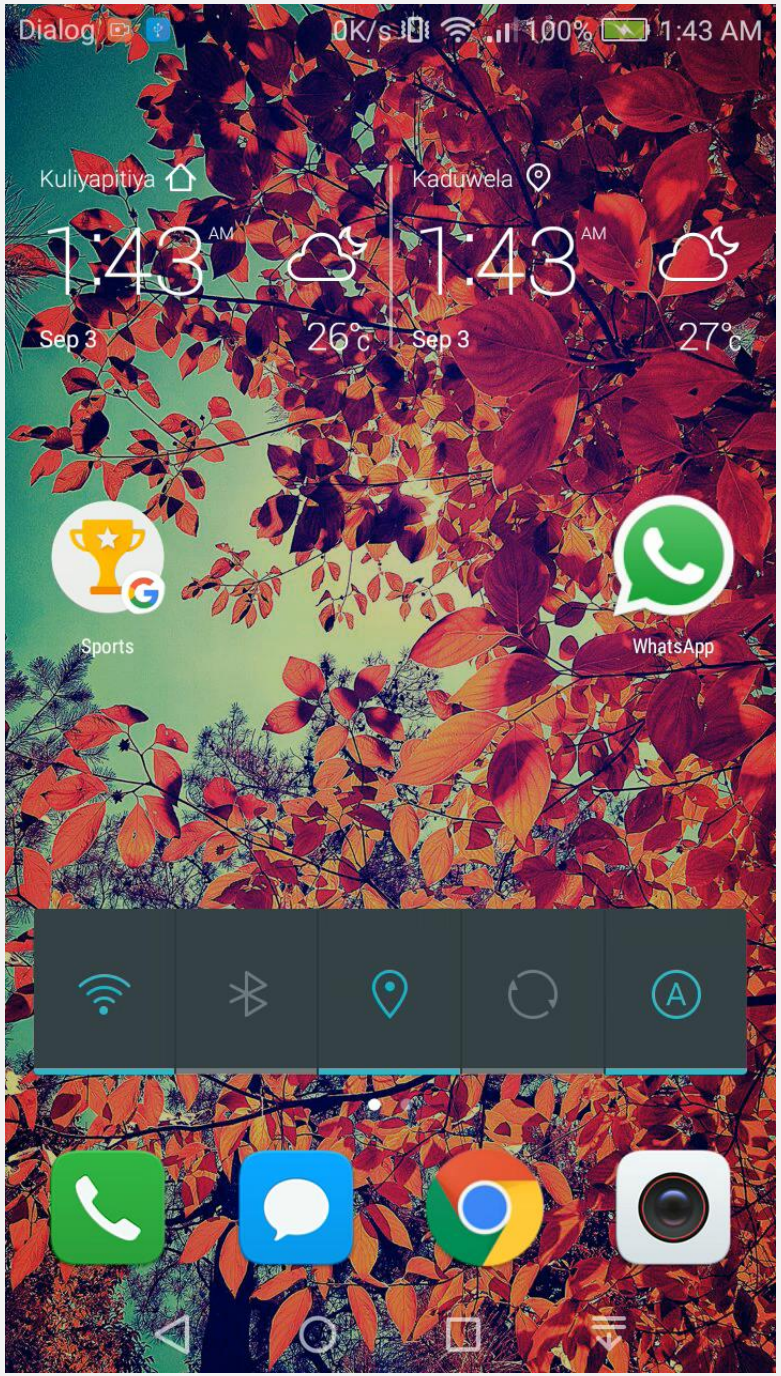

TourGuru
Malabe
Malabe
Sri Lanka Institute of Information Technology
SLIIT Malabe Campus, New Kandy Road, Malabe
N&A Property Developers
50/1A, New Kandy Road,Kothalawala,, Malabe
ITEE Software
161/6/8 Methsiri Mawatha, Malabe
Cargills Food City Weliwita
No 162/7, Ratna Building, New Kandy Rd, Weliwita Junction, Malabe

RESULTS

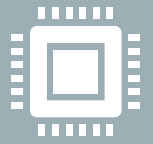

TourGuru
Start location
End location
Google

RESULTS AND DISCUSSION

Video discusses on the execution process of Flutter frontend with route mapping component.



FUTURE WORK



Fix the miniature errors and updates in the mobile application.

Make the final tweaks for the best outcome of the product.

Finalize and get ready for commercialization of the product.

QUESTIONS?