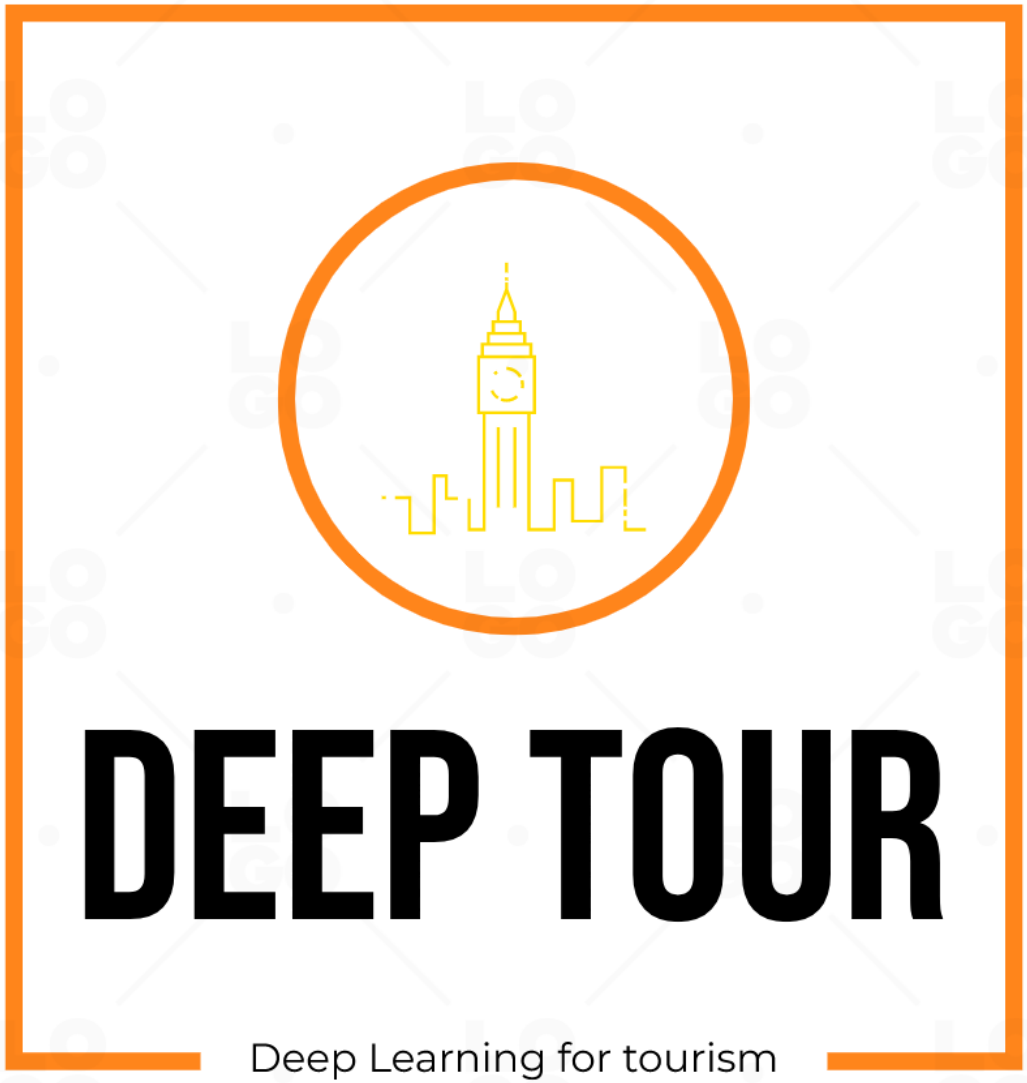


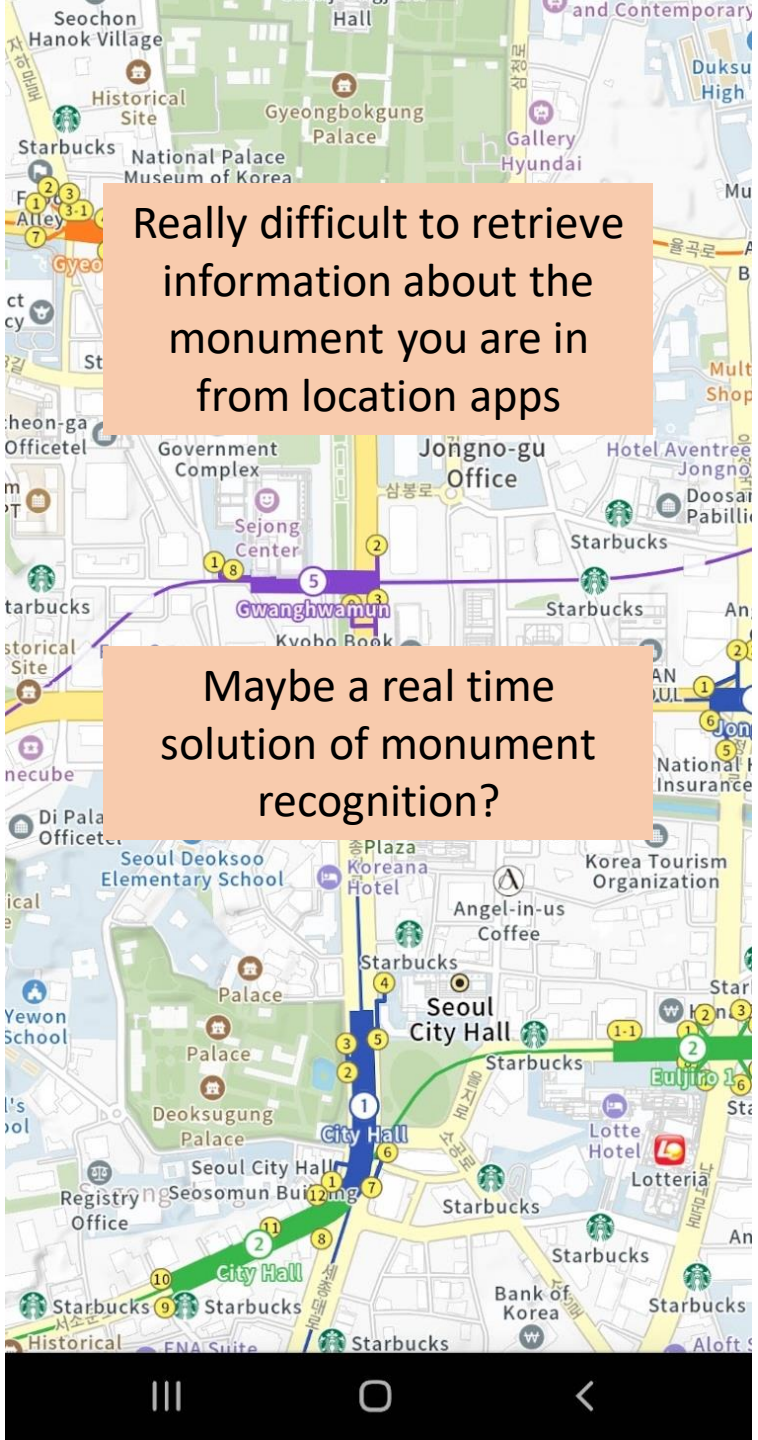
By Team 2: Yohan LANG, Norman DORET, Andrei PALAEV

Problem statement

Given the phone’s camera feed, detect all the monuments and interest points while providing information about them

Target users

- Foreigners unable to speak the local language
- Tourists or new residents discovering the city by themselves
- Curious bypassers and culture enthusiasts
  - What is the name of this monument I’m seeing right now ?
  - Who created it ?
  - How can I learn more about it ?
  - I don’t have time to pinpoint each building on the map, I'm just passing by

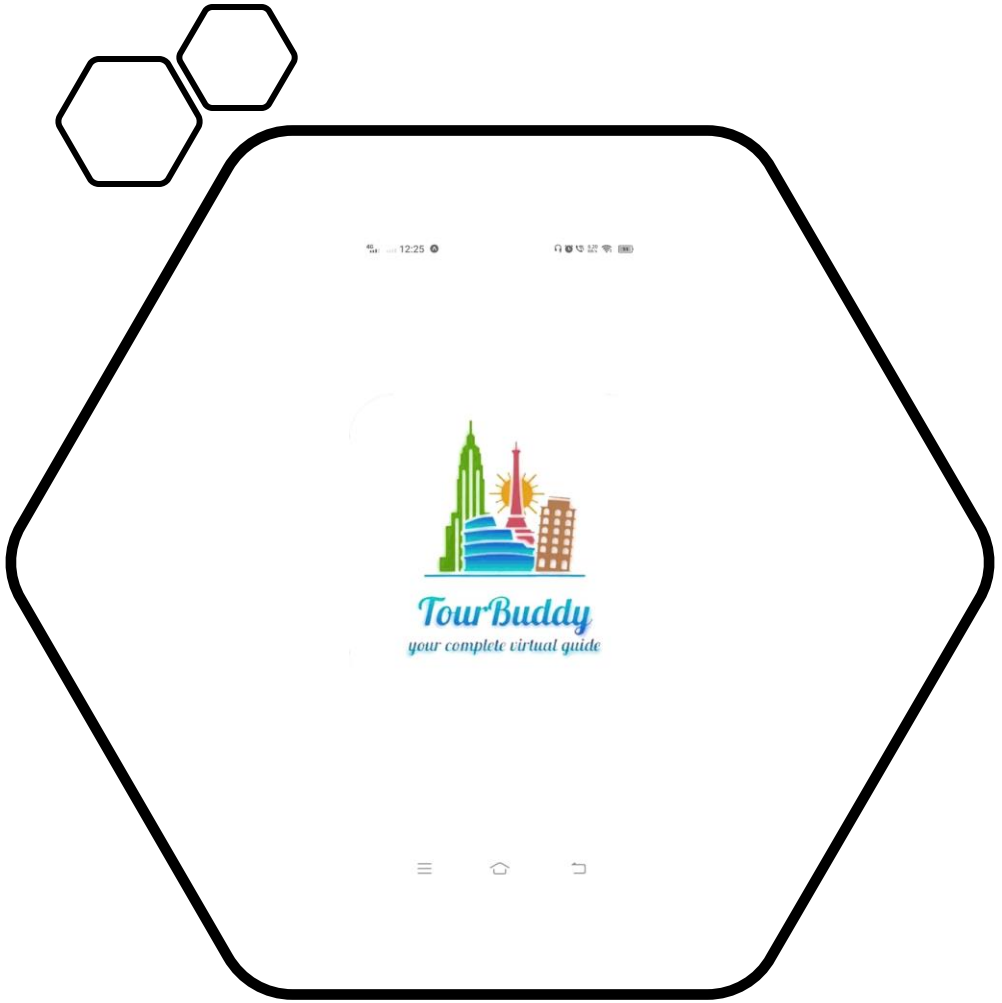


Existing solutions

- Google Lens
  - Heavily relies on server-side processing
  - Has big problems with privacy
  - Does not process live feed

Existing solutions

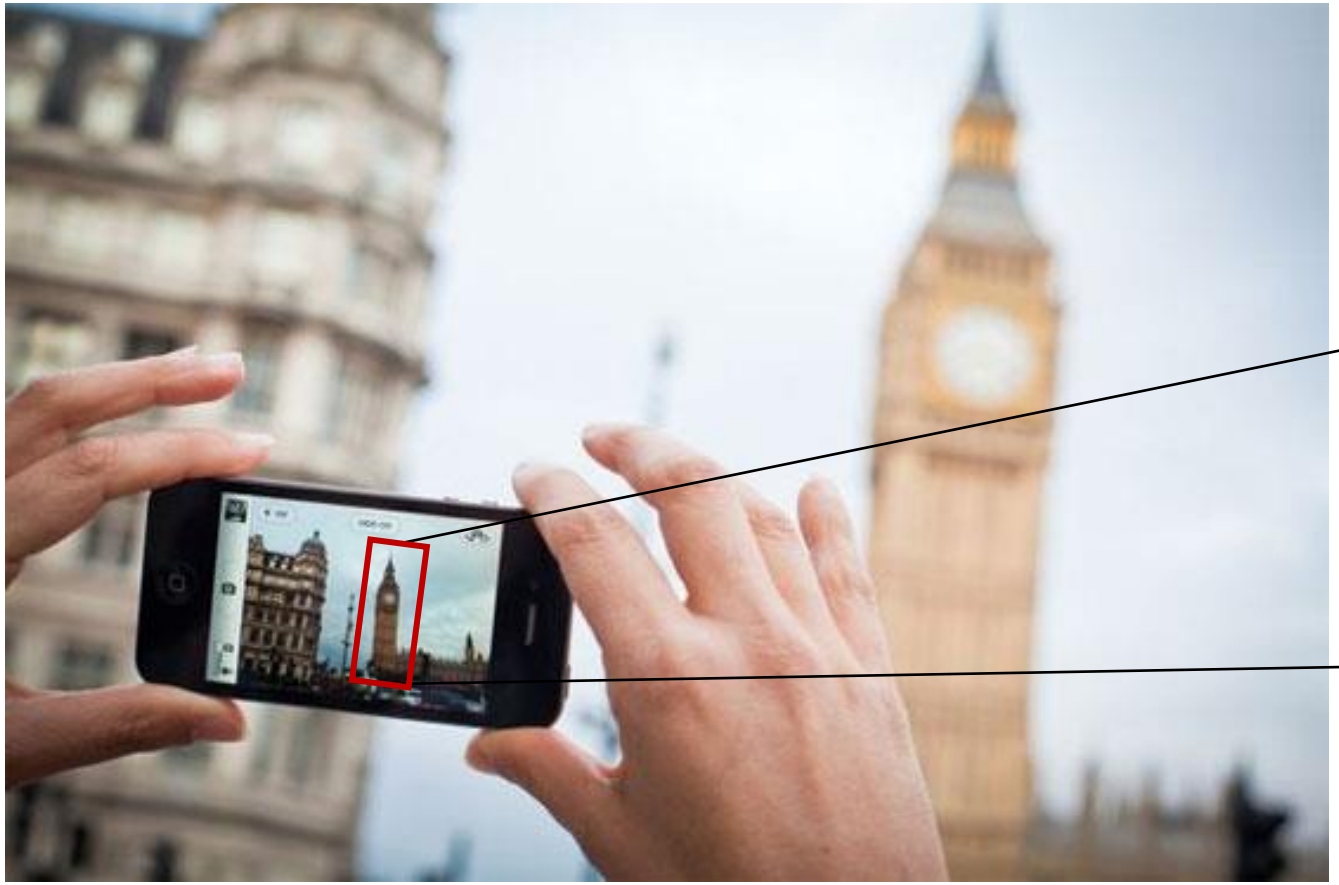
- There are also some researches about monument detection apps
- Process already taken photos, not the camera image itself
- Mainly used for ulterior classification (album creation)



Key solution

- By providing an augmented experience for something as simple as a walk, we make city touring accessible to any person with a smartphone.
- Represent an earn of time to those who want to visit and learn about a city by looking the surrounding.
- Deep Tour provides a deep learning solution to those questions, right in your pocket.

Usage scenario

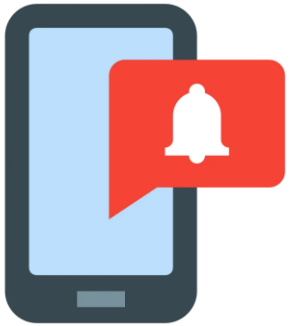


Big Ben
Design: Augustus Pugin
Completion: 1859
Height: 96 meters

URL: https://en.wikipedia.org/…
Map: https://www.google.com/maps/…

Optional features and extensions

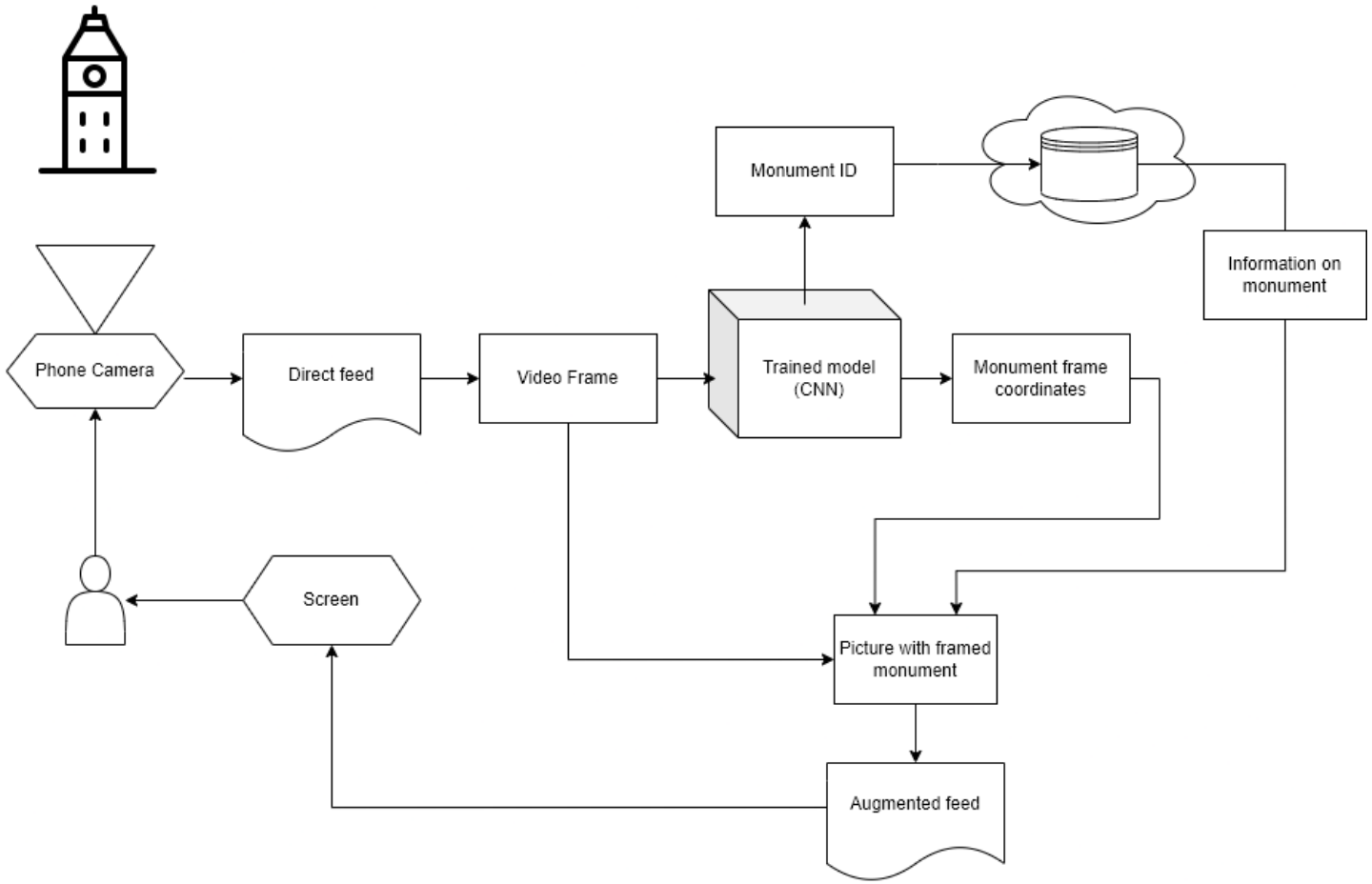
- Notification system for nearby interest points
- Recommendation system
- Screen and audio guidance (“look right to see the Westminster palace”)
- Google glasses extension



“You are passing by Big Ben”

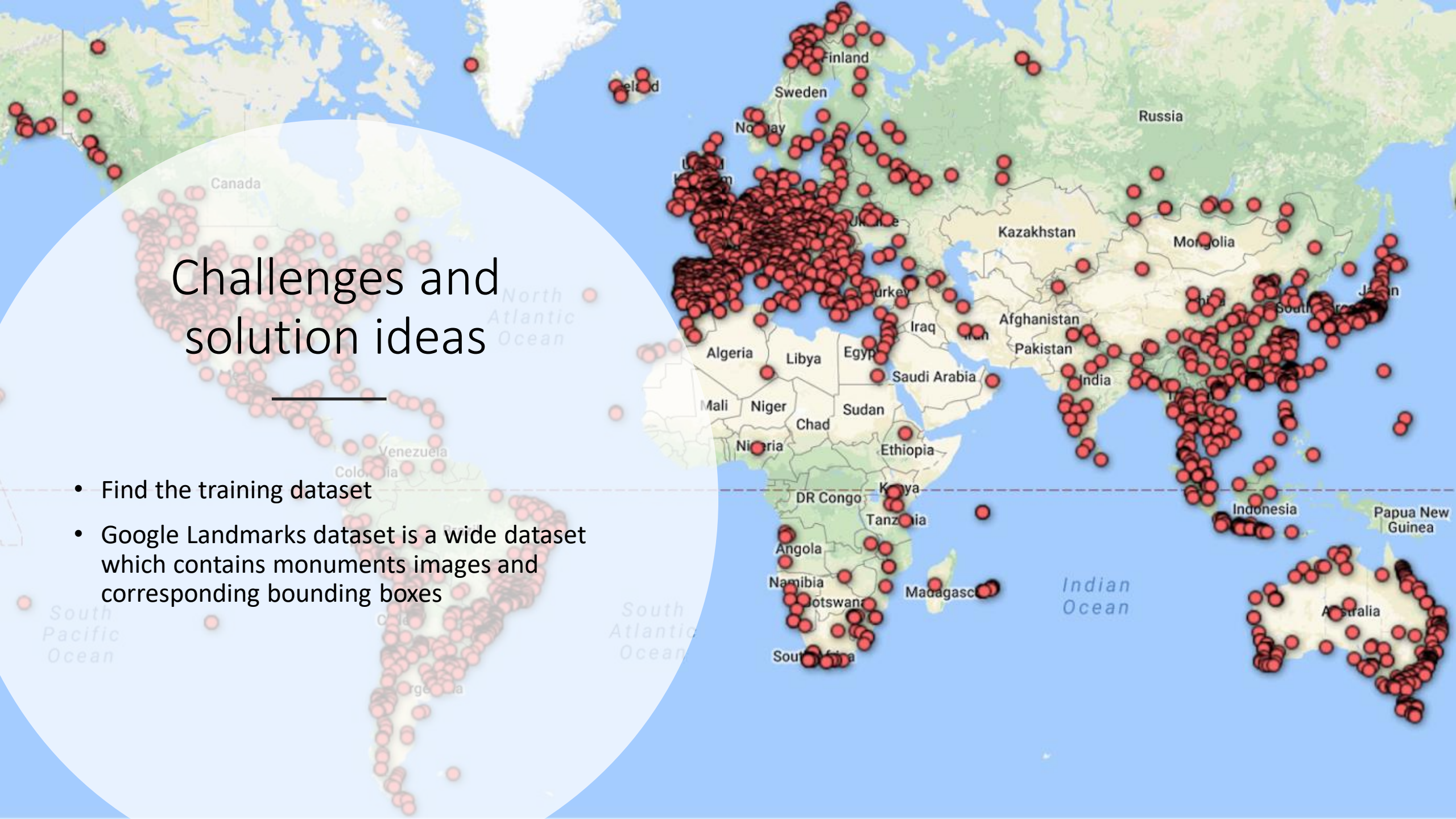
Big Ben
Design: Augustus Pugin
Completion: 1859
Height: 96 meters
URL: https://en.wikipedia.org/…
Map: https://www.google.com/maps/…

System overview



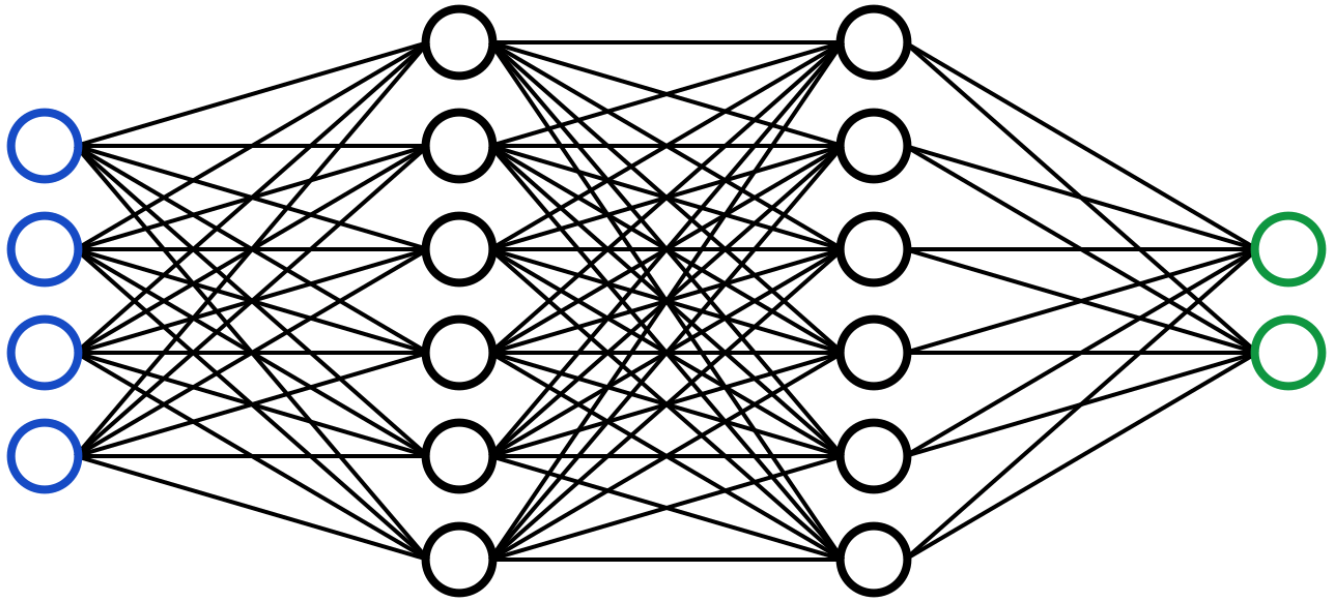
Challenges and solution ideas

- Find the training dataset
- Google Landmarks dataset is a wide dataset which contains monuments images and corresponding bounding boxes



Challenges and solution ideas

- Training a Neural Network for monuments detection
  - There exist some pretrained models for object detection
  - Neural Network can learn embeddings instead of labels



Challenges and solutions ideas

- Interactivity and reactivity:
  - Augmented reality rather than just image processing
  - Extract frames from the camera feed
  - Using the same method as a snapchat filter
- Running a deep learning model on smartphone
  - Light and fast trained model
  - TensorFlow Lite or Pytorch Mobile is the solution

Evaluation Strategy

- User study with a real condition simulation in Seoul
  - Search the limits of the recognition algorithm
- Give access to the app to a trial sample (acquaintances) and collect feedback
  - Is it easy to use on the streets ?
  - Does it return enough information ?

Project Plan

Tasks	7 April	14 April	21 April	28 April	2 May	9 May	16 May	23 May	30 May	6 June
Search a dataset to train	YL, ND									
Process dataset			YL, AP							
Build/Adapt a Neural Network model			AP, ND							
Train the model				AP						
Adapt the model for smartphone					AP, ND					
Setup retrieval of video flux			YL, AP							
First UI design				YL, ND						
Retrieve coordinate of the monument in the screen				YL, ND						
Setup basic content generation (Layout on Android)				YL, ND						
Intermediate presentation				Preparation						
Feedback modifications from Intermediate report						YL, ND, AP				
Final UI design						YL, ND				
Evaluation/Test in real condition							YL, AP			
Notification system								ND, AP		
Recommendation system								AP, YL		
Screen guidance								YL, ND		
User study							ND, AP			
Final presentation									Preparation	

[Project plan]

Final deliverable

- An Android application that:
  - Takes the image from the phone camera
  - Shows the results of the monument detection and provides the information about them

Success criteria

- The app detects the monuments with high accuracy
- The app gives the relevant information about the monuments

Thank you for your attention !

Do you have any questions ?