E6893 Big Data Analytics

NICE DRAWING

- *A tool that reproduces similar looking line drawings from sketches or photos*

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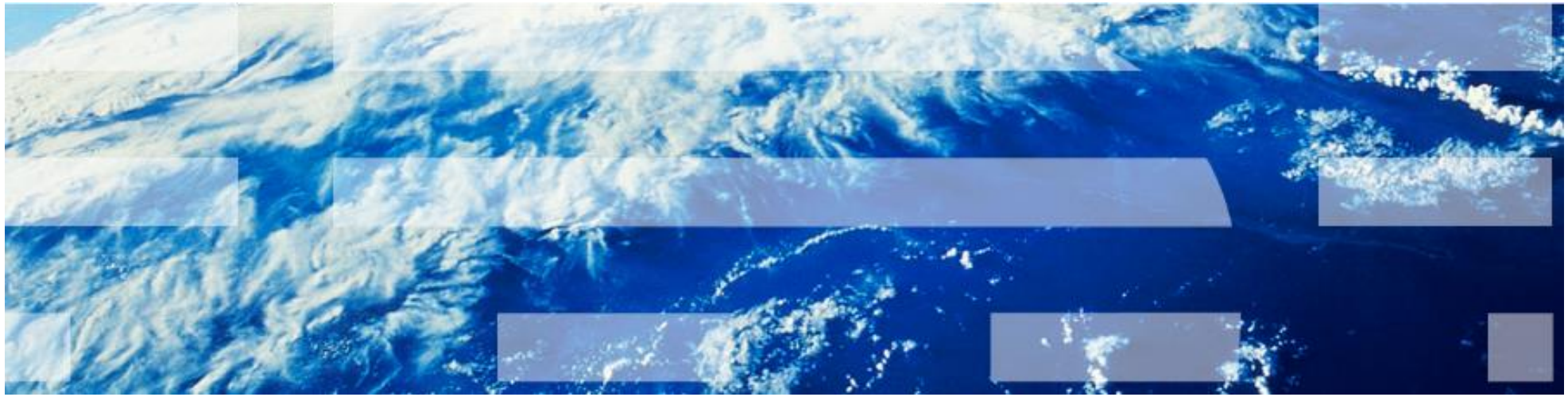
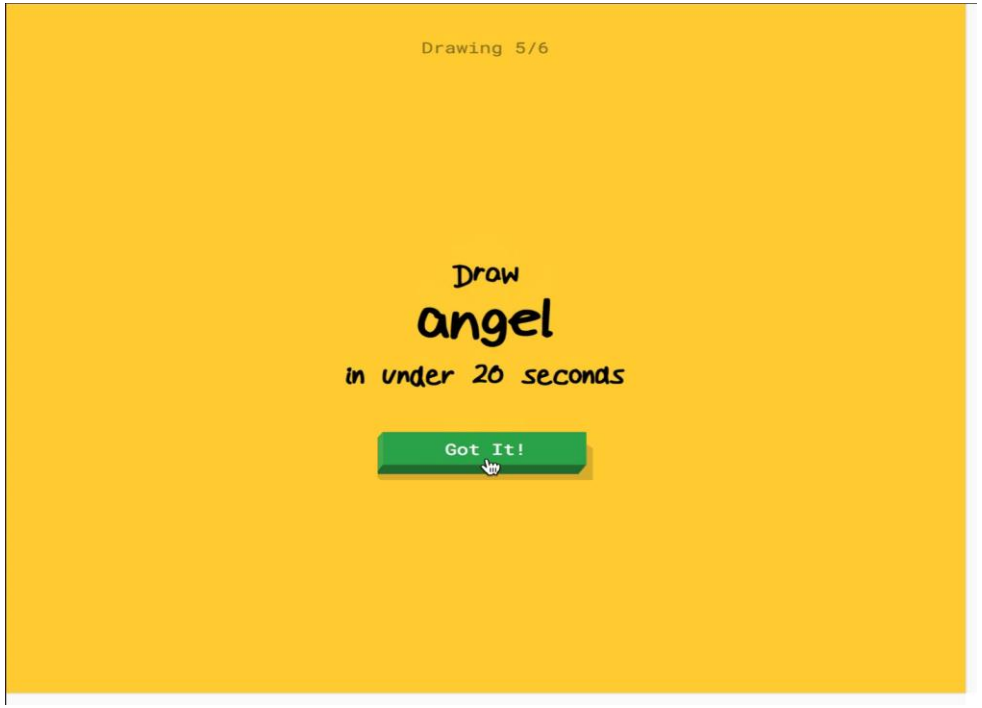


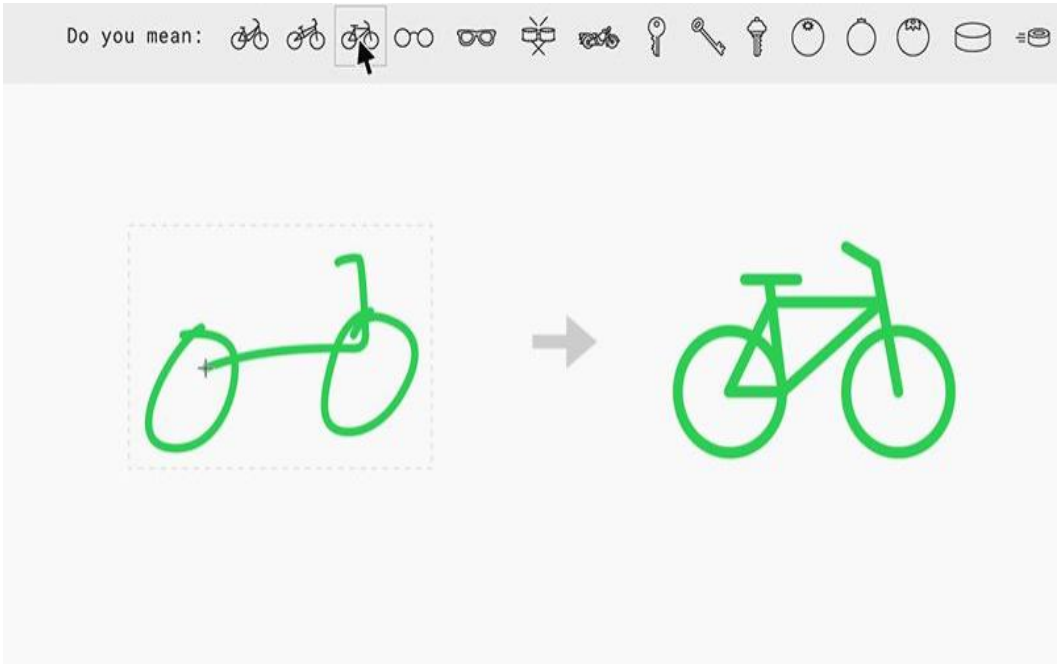
Agenda

- Motivation
- Goals
- Dataset, Algorithms, and Tools
- Expected Contribution and Timeline

Motivation

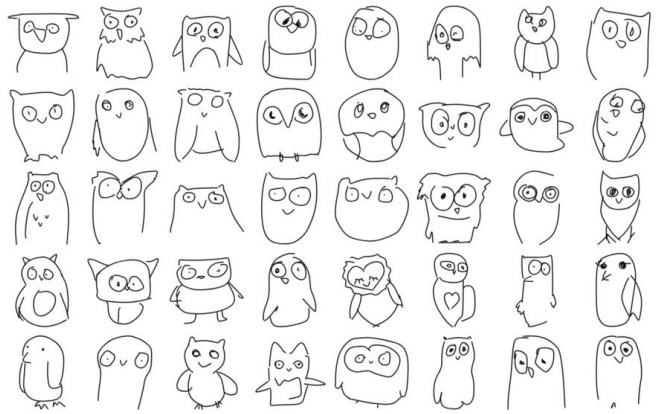
- Inspired by Quick, Draw! and AutoDraw developed by Google
- Explore the application of the state-of-the-art technologies toward visual art
- Make the drawing experiences easier, faster, and more fun to the general public
- Assist the creative process of professional artists and designers and help them expand imagination

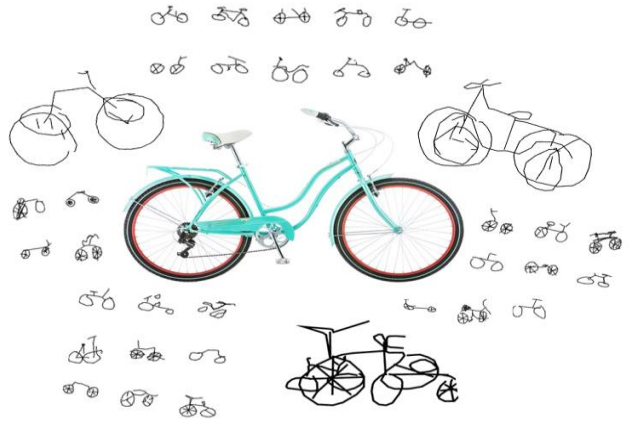


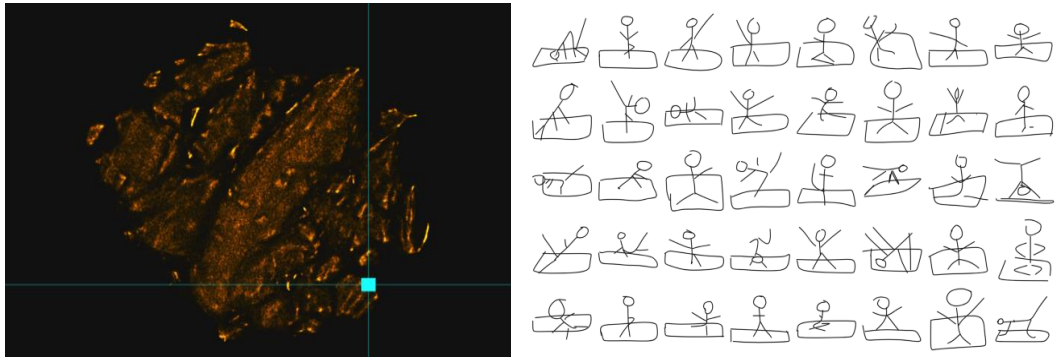


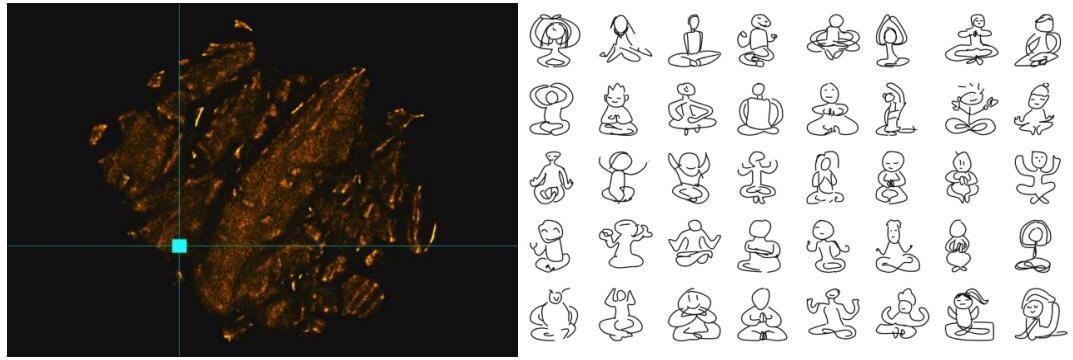
Goals

- Turn a (poorly) sketched digital drawing into (more aesthetically) similar looking reproductions
- Convert an uploaded photograph of an object into an unrealistic but similar looking line drawing



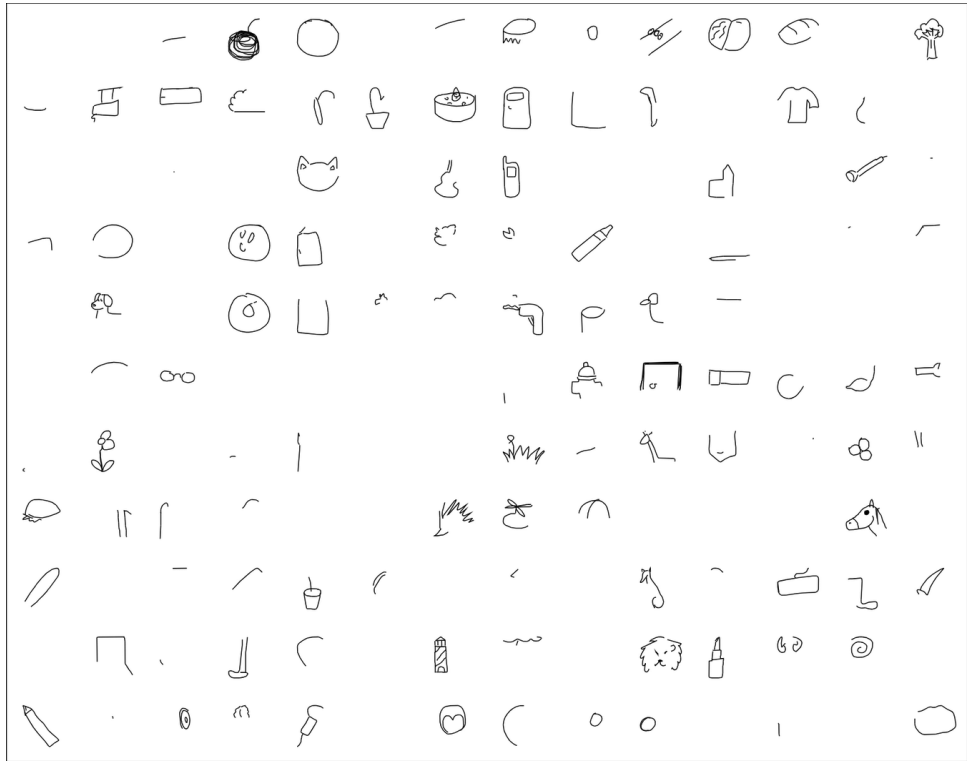






Dataset

- Source: https://github.com/googlecreativelab/quickdraw-dataset
- 50 millions of drawings across 345 categories from the game Quick, Draw!
- The drawings were captured as timestamped vectors, tagged with metadata including what the player was asked to draw and in which country the player was located.




```
word: "cat"
countrycode: "JP"
timestamp: "2017-03-15 21:41:50.79245 UTC"
recognized: true
key_id: "6429928587264000"
strokes: ▾Array(21) [
  0: ▾Array(8) [
    0: ▸Object {x: 348.75, y: 185.25}
    1: ▸Object {x: 344.25, y: 168.75}
    2: ▸Object {x: 350.25, y: 155.25}
    3: ▸Object {x: 384.75, y: 99.75000000000001}
    4: ▸Object {x: 399.75, y: 83.25000000000001}
    5: ▸Object {x: 407.25, y: 87.75000000000001}
    6: ▸Object {x: 414.75, y: 120.75000000000001}
    7: ▸Object {x: 423.75, y: 182.25}
  ]
  1: ▾Array(3) [
    0: ▸Object {x: 531.75, y: 89.25000000000001}
    1: ▸Object {x: 512.25, y: 164.25}
    2: ▸Object {x: 510.75, y: 183.75}
  ]
  2: ▾Array(6) [
    0: ▸Object {x: 540.75, y: 83.25000000000001}
    1: ▸Object {x: 546.75, y: 81.75000000000001}
    2: ▸Object {x: 554.25, y: 92.25000000000001}
    3: ▸Object {x: 561.75, y: 134.25}
    4: ▸Object {x: 566.25, y: 185.25}
    5: ▸Object {x: 561.75, y: 207.75}
  ]
  3: ▾Array(2) [
    0: ▸Object {x: 537.75, y: 174.75}
    1: ▸Object {x: 554.25, y: 176.25}
  ]
  4: ▾Array(5) [
    0: ▸Object {x: 378.75, y: 174.75}
```

Algorithms and Tools

Algorithms:

- **Drawing Recognition**: Build a classifier (e.g. RNN) that takes a drawing as input and recognizes its category.
- **Object Detection**: Recognize the objects in a photograph using TensorFlow Object Detection API and map them with categories in the dataset.
- **Visualization**: Use t-SNE to visualize similarities between drawings.

Tools:

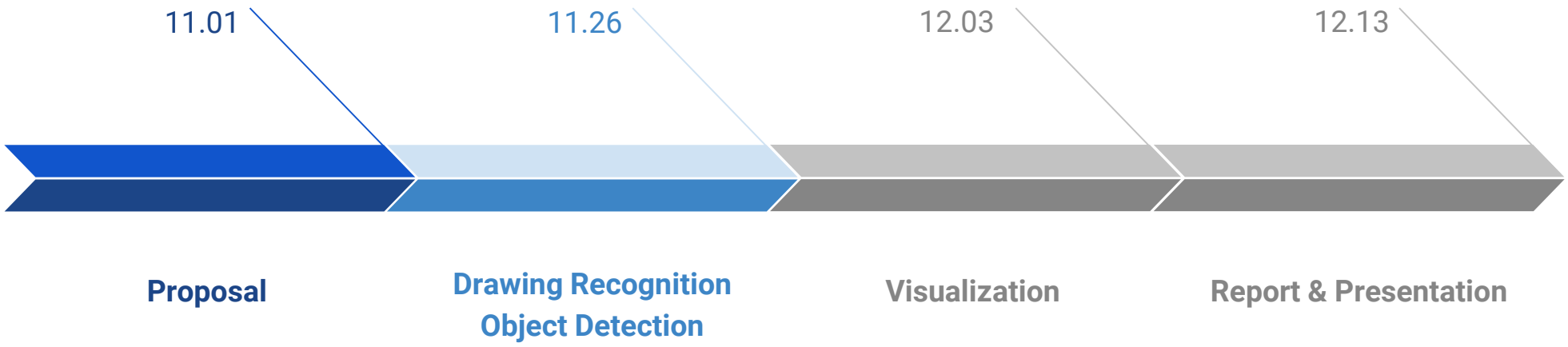
Google Cloud Platform, Jupyter Notebook, Python, TensorFlow, TensorFlow Object Detection API

Expected Contributions and Timeline

Expected Contributions:

- **Xueyao Li**: Drawing Recognition, Visualization, Report and Presentation
- **Yiyi Zhang**: Object Detection, Visualization, Report and Presentation

Timeline:



Thank You!

YouTube Link: https://www.youtube.com/watch?v=IFaMx85pSVE&feature=youtu.be\