GRACE HOPPER CELEBRATION

ANITA B.ORG

Inclusive Face Augmentation

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Inclusive Face Augmentation

Camera Camera on the phone, who's the fairest of us all? Lessons we learnt about Machine Learning fairness while building Google's Face Augmentation Framework.

1.5B people have access to AR self expression apps

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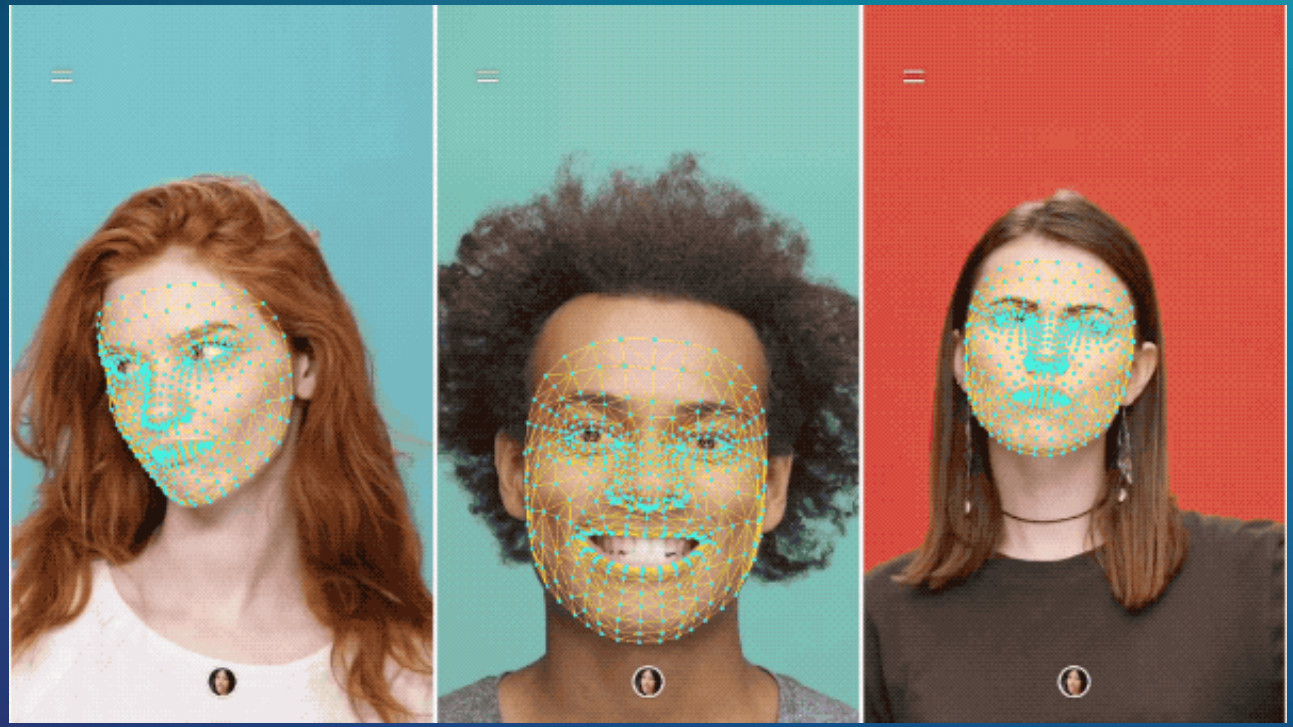
The human face is fundamental to self-expression



Full Mesh CPU
SWITCH CAMERA
60 fps
N/A: N/A
N/A: N/A
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Full Mesh CPU
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Full Mesh CPU
SWITCH CAMERA
60 fps
N/A: N/A
N/A: N/A
N/A: N/A
Full Mesh CPU
SWITCH CAMERA
N/A: N/A
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Validation Pipeline

Validation Pipeline

Inclusion Quality

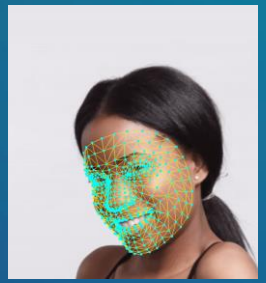
User Scenarios

Perceived Errors

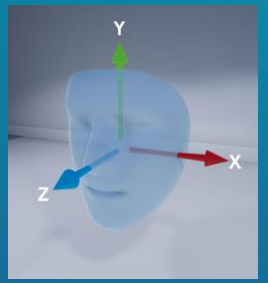
User Subgroups

More Inclusion

Glasses

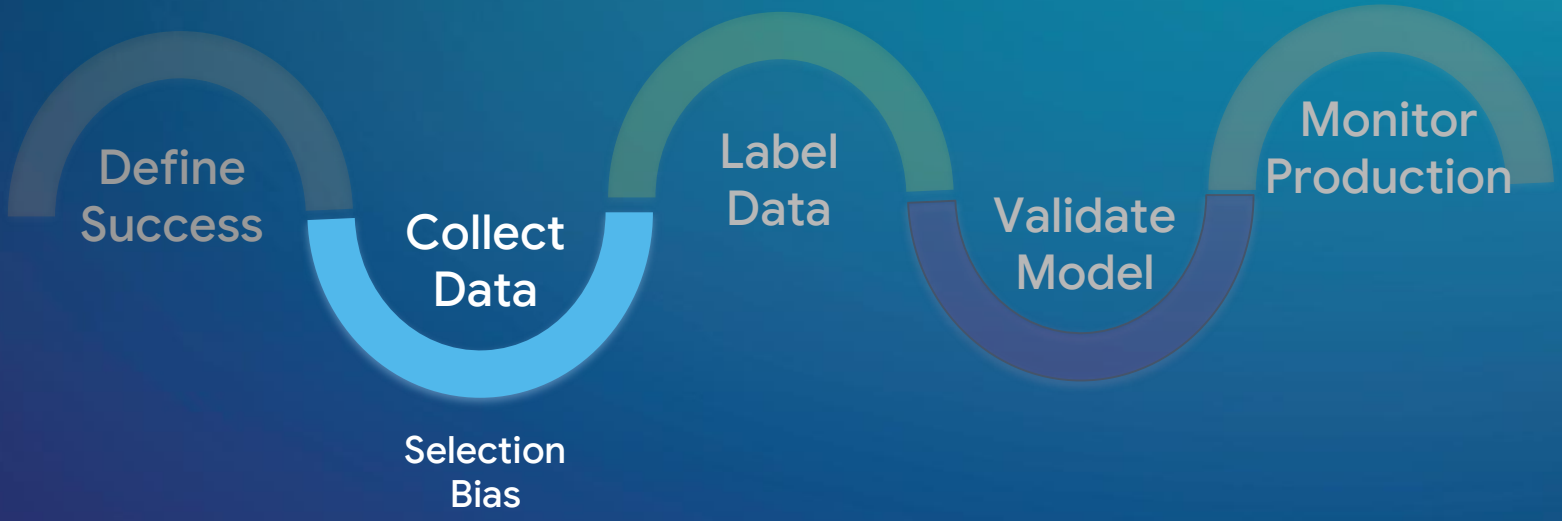


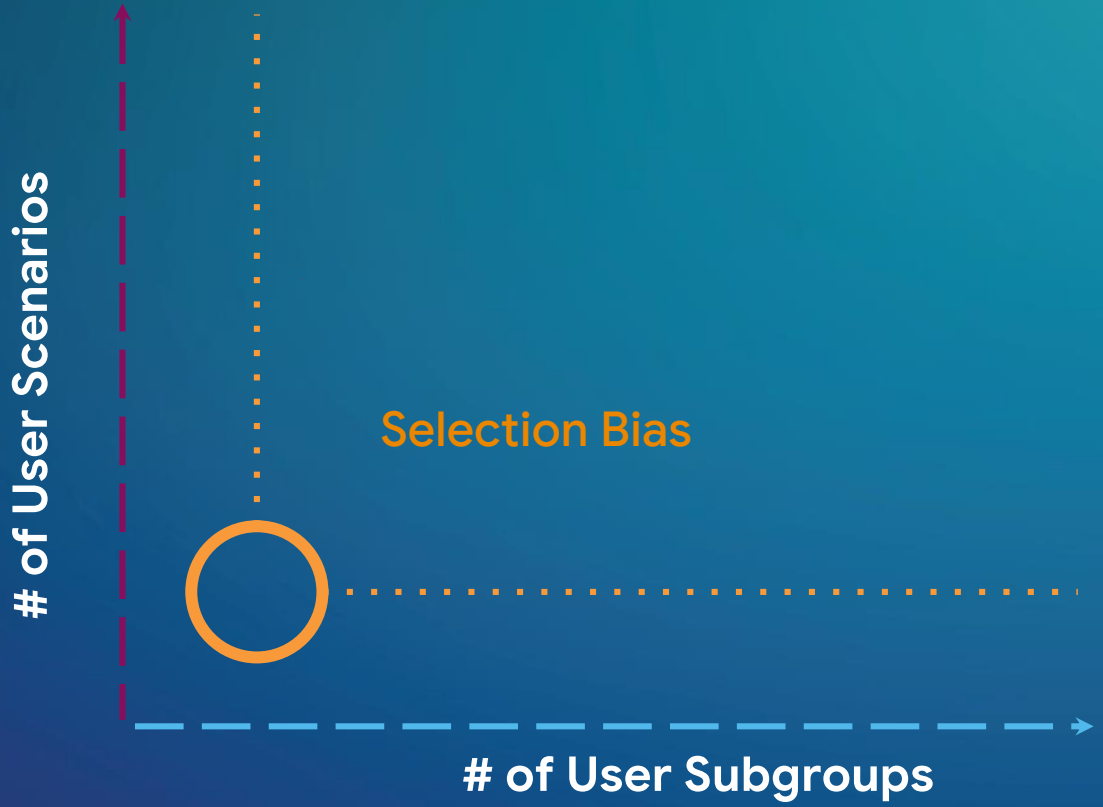
Jitter



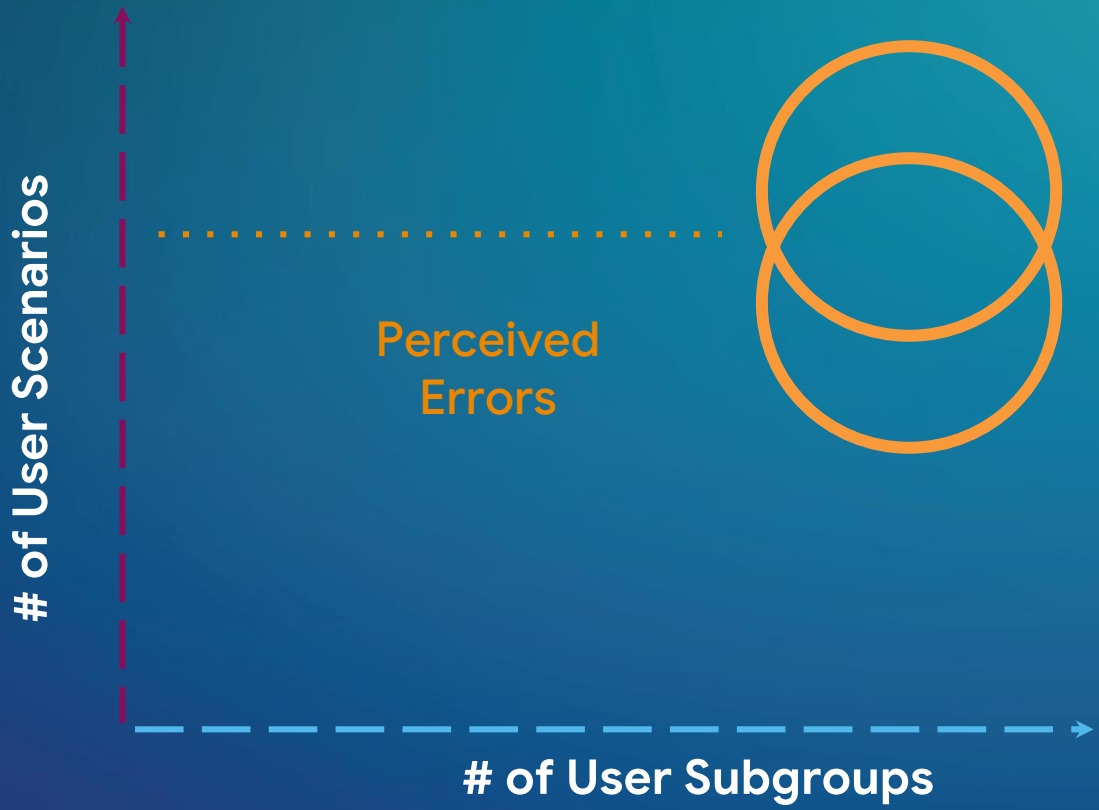
Face Rotation

Validation Pipeline

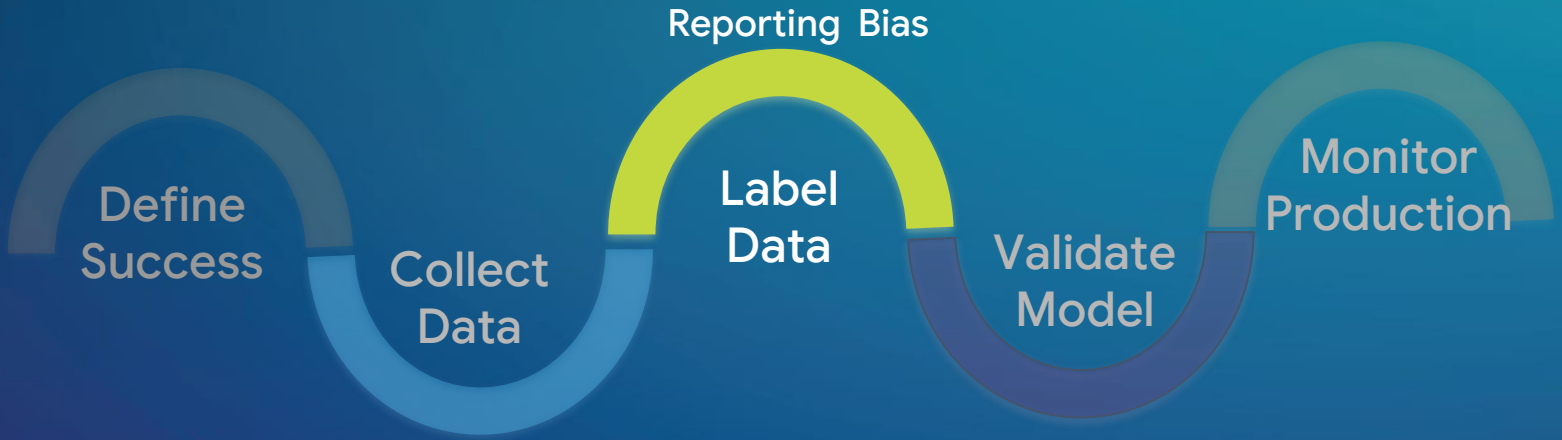



# of User Scenarios
Selection Bias
# of User Subgroups

# of User Scenarios
Statistically Significant
# of User Subgroups


# of User Scenarios
Perceived
Errors
# of User Subgroups

Validation Pipeline



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The Fitzpatrick Scale

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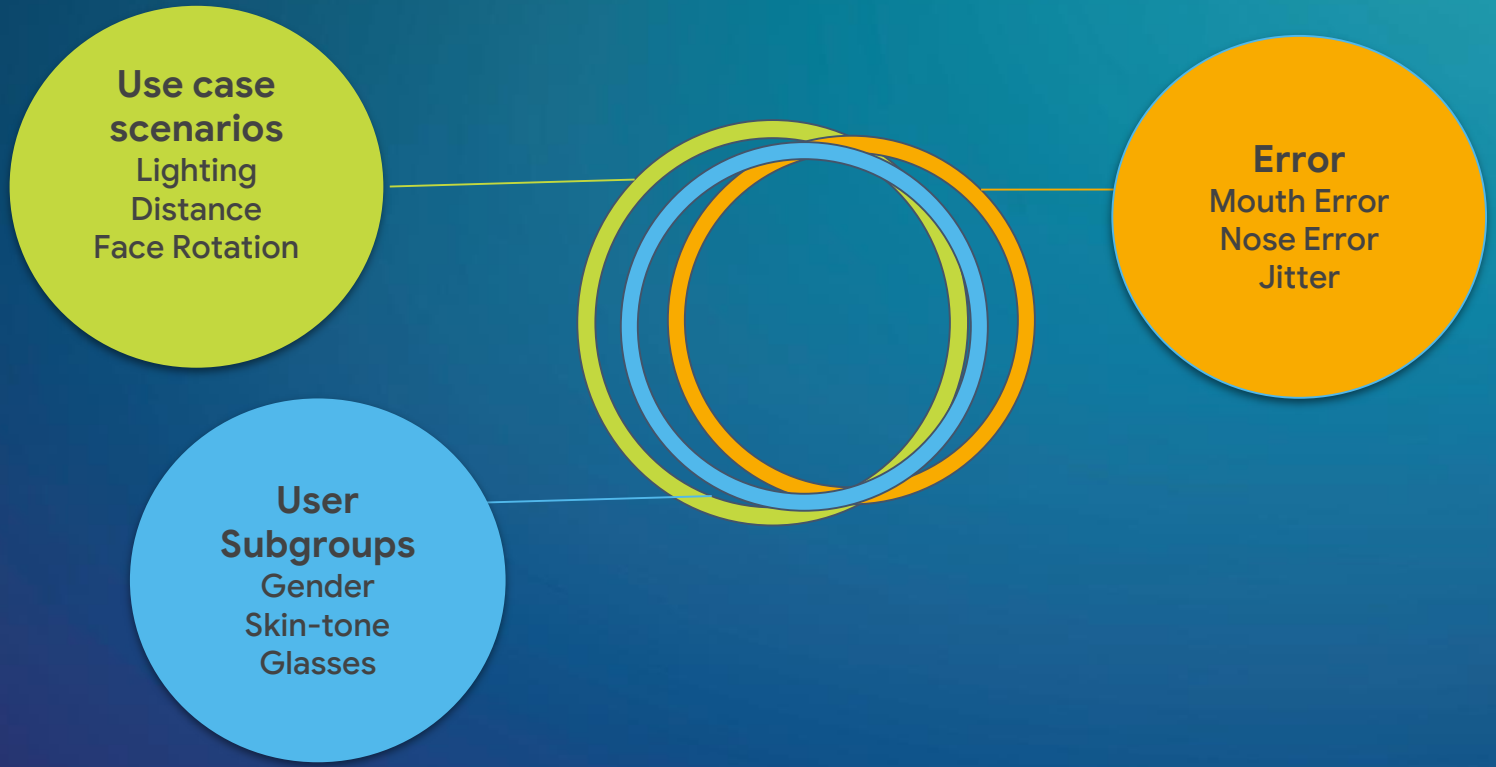
Keep the data secure

Data Access

Data Retention

Data Sharing

Validation Pipeline



Metrics = Use case scenarios × User subgroups × Error

Validation Pipeline

Keep an eye!

Hypothetical Usage

In Summary

Define Success

Start with user behavior

Collect Data

Choose datasets wisely

Label Data

Self-reporting is key

Validate Model

Minimize loss in subgroups

Monitor Production

Understand in-field use

Keep everything safe

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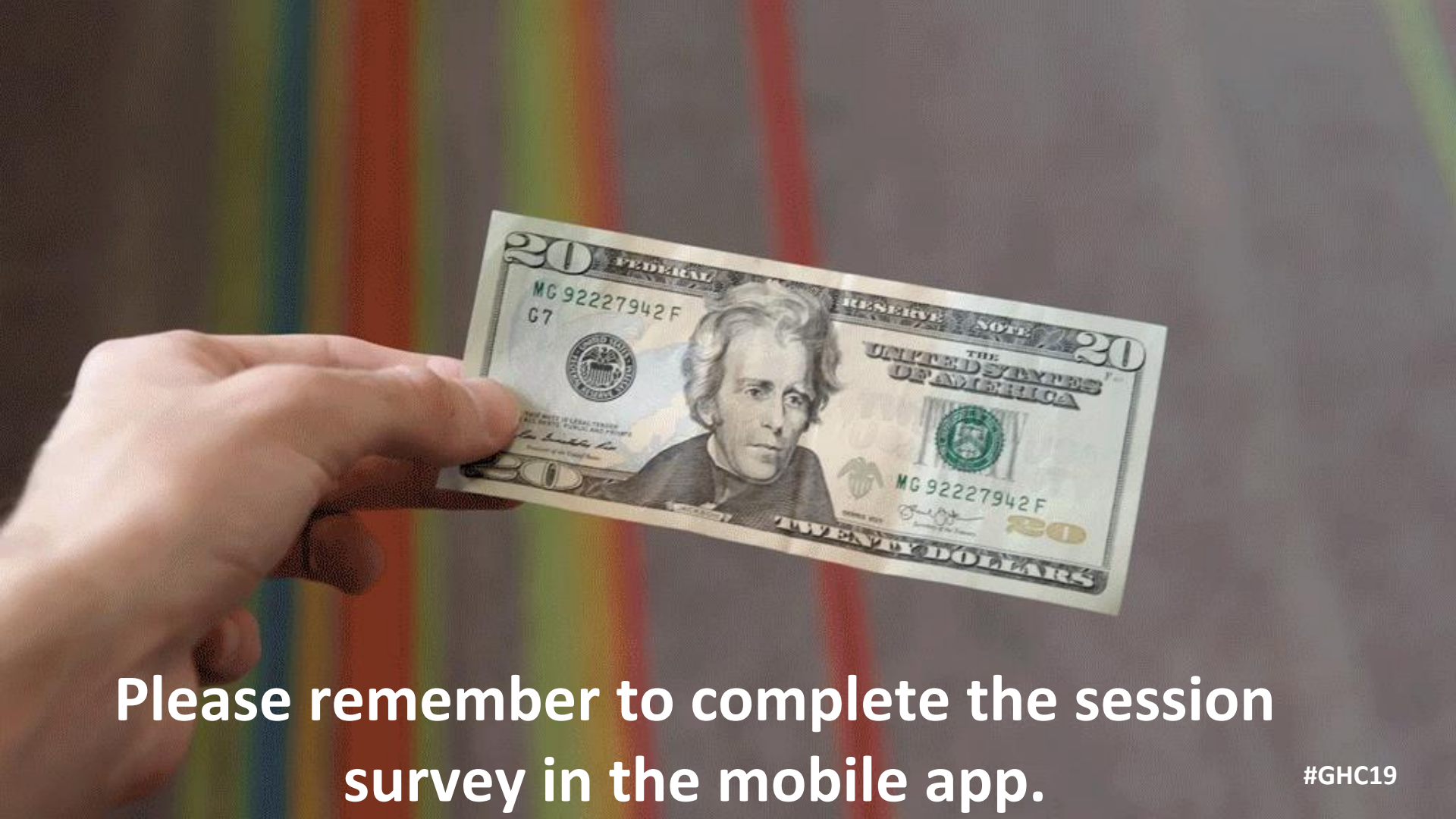
For further reading,

- https://developers.google.com/ar
- https://developers.google.com/machine-learning
- http://deeplearning.net/datasets/



Please remember to complete the session survey in the mobile app.

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