Photobox Final Presentation

Fa20 – Human AI Interaction

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AGENDA

Early Works

Switch Focus

Method

Solutions

Model Card

PhotoBox

Early Works

Early Works

Initiation: Managing photos in mobile devices is getting harder

- Manual vs AI Driven

- Cumbersome manual annotation

- Loss of flexibility and personalization

- Algorithm transparency

Features want to improve the most:

- Photo search system

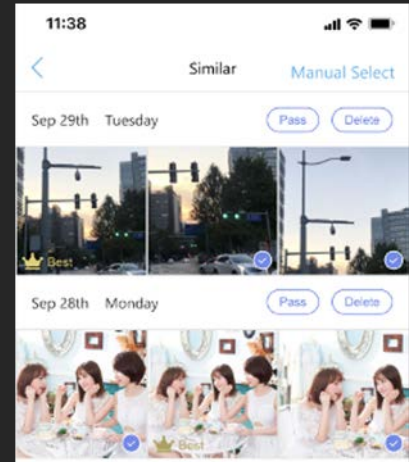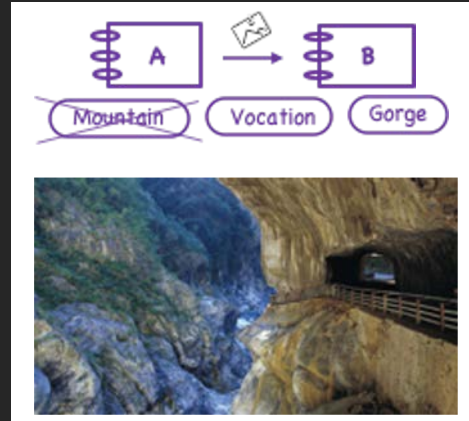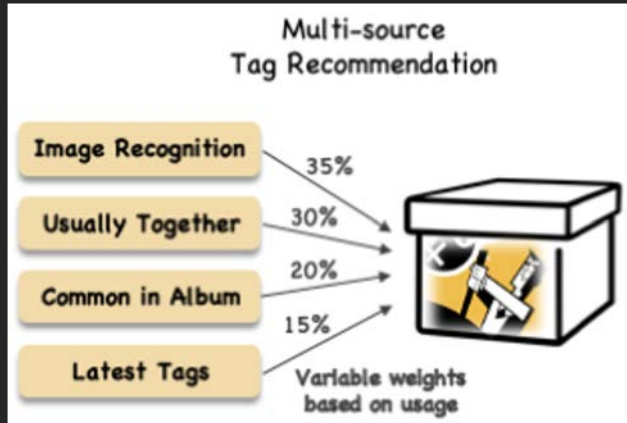- Manual classification/ tag

- Similar photo detection

What user are expecting:

- Improved searching system

- Smart tags of events and activities
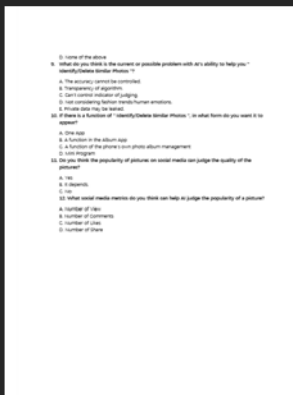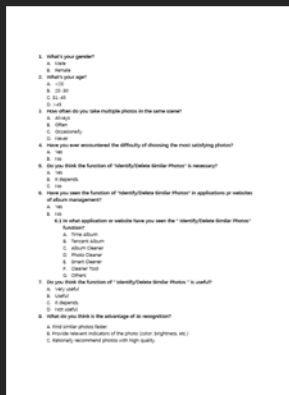
- Remove similar pictures

Early Works

Design:

- Intelligent tag recommendation with personalized options

- Manual correction for algorithm

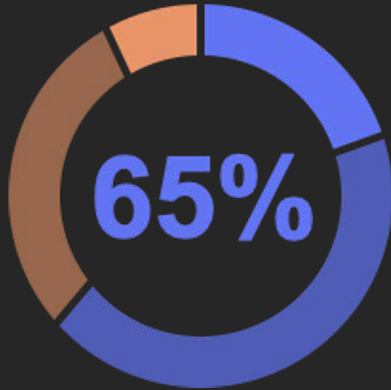- Similar photo detection and delete recommendation

Switch Focus

Switch of Focus

- Focus on features that differentiate from other apps: photo recommendation system

- Second round survey

- Interviews

Switch of Focus

Multiple photos for
the same scene

65%

Hard to select the most
satisfying photo

73%
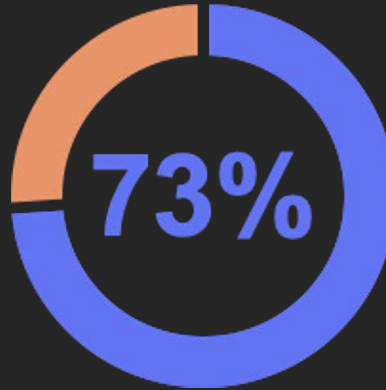
Smart feature helps
with the situation

94%
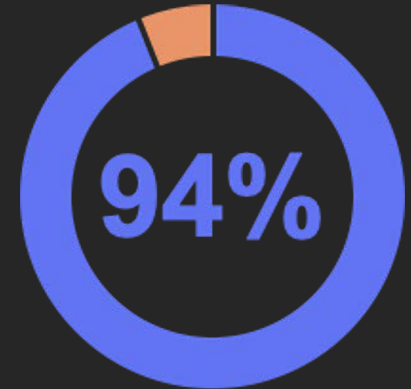
- Similar photo detection and deletion

- Photo recommendation for social platform

Method

Method

Identify potential issues

Recommendation fairness and ethics

Data limitation

Transparency and explanation

→

Build up solutions

Developing algorithm

Interaction design

PhotoBox

Method - Potential Issues

Recommendation fairness and ethics:

1. Content (inappropriate content or negative popular)

2. Opacity (black box of the recommendation system)

3. Fairness (popularity influence)

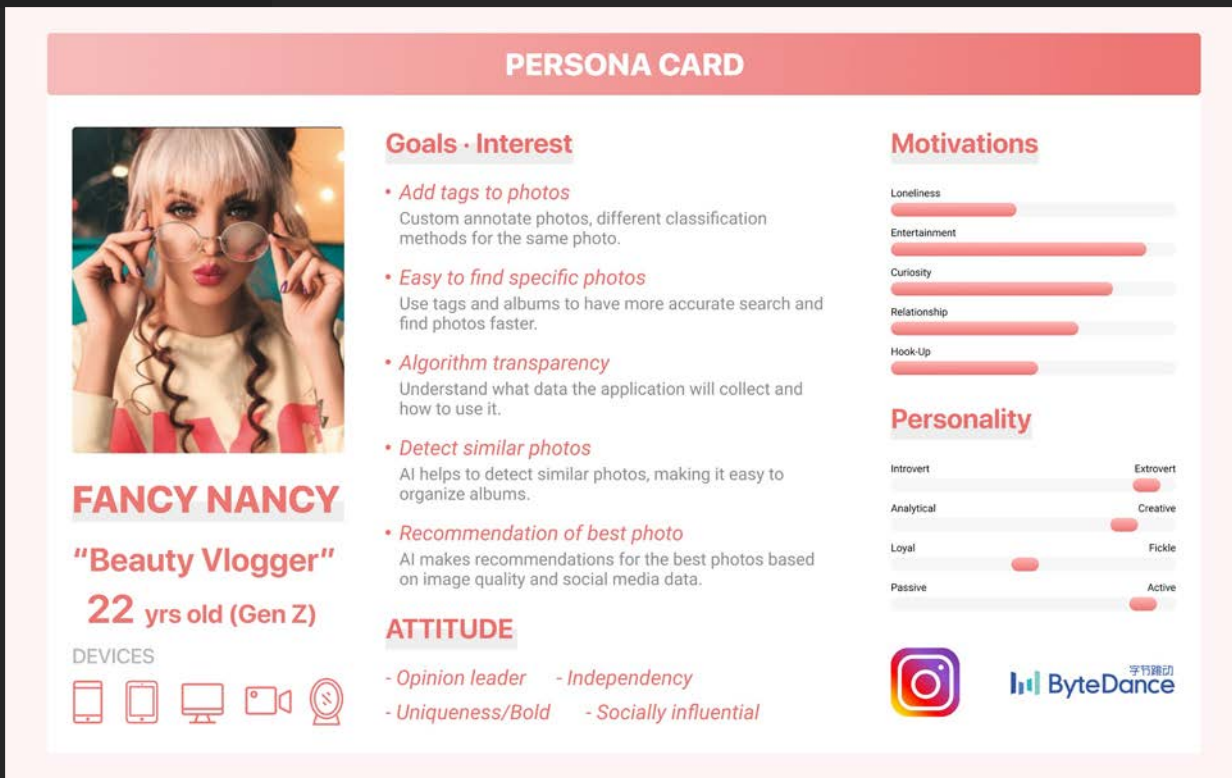4. Social effects (lack of exposure to other viewpoints)

Data:
User info influence, various popularity scores, bias

Transparency:
how the algorithm works, what would be assessed in users' pics, how does the algorithm come up with the result

Solution - Design

Solution - Design

PERSONA CARD

FANCY NANCY

"Beauty Vlogger"

22 yrs old (Gen Z)

DEVICES

Goals · Interest

- **Add tags to photos**
  Custom annotate photos, different classification methods for the same photo.

- **Easy to find specific photos**
  Use tags and albums to have more accurate search and find photos faster.

- **Algorithm transparency**
  Understand what data the application will collect and how to use it.

- **Detect similar photos**
  AI helps to detect similar photos, making it easy to organize albums.

- **Recommendation of best photo**
  AI makes recommendations for the best photos based on image quality and social media data.

ATTITUDE

- Opinion leader   - Independency
- Uniqueness/Bold   - Socially influential

Motivations

Loneliness

Entertainment

Curiosity

Relationship

Hook-Up

Personality

Introvert — Extrovert

Analytical — Creative

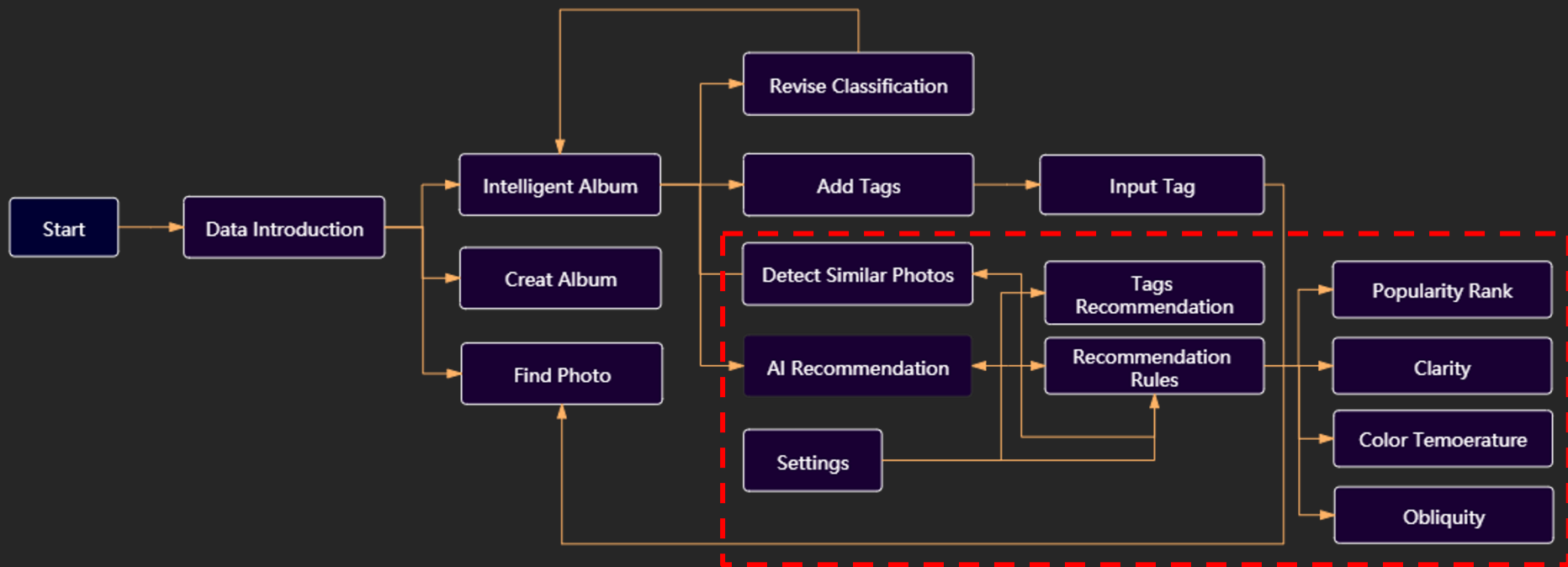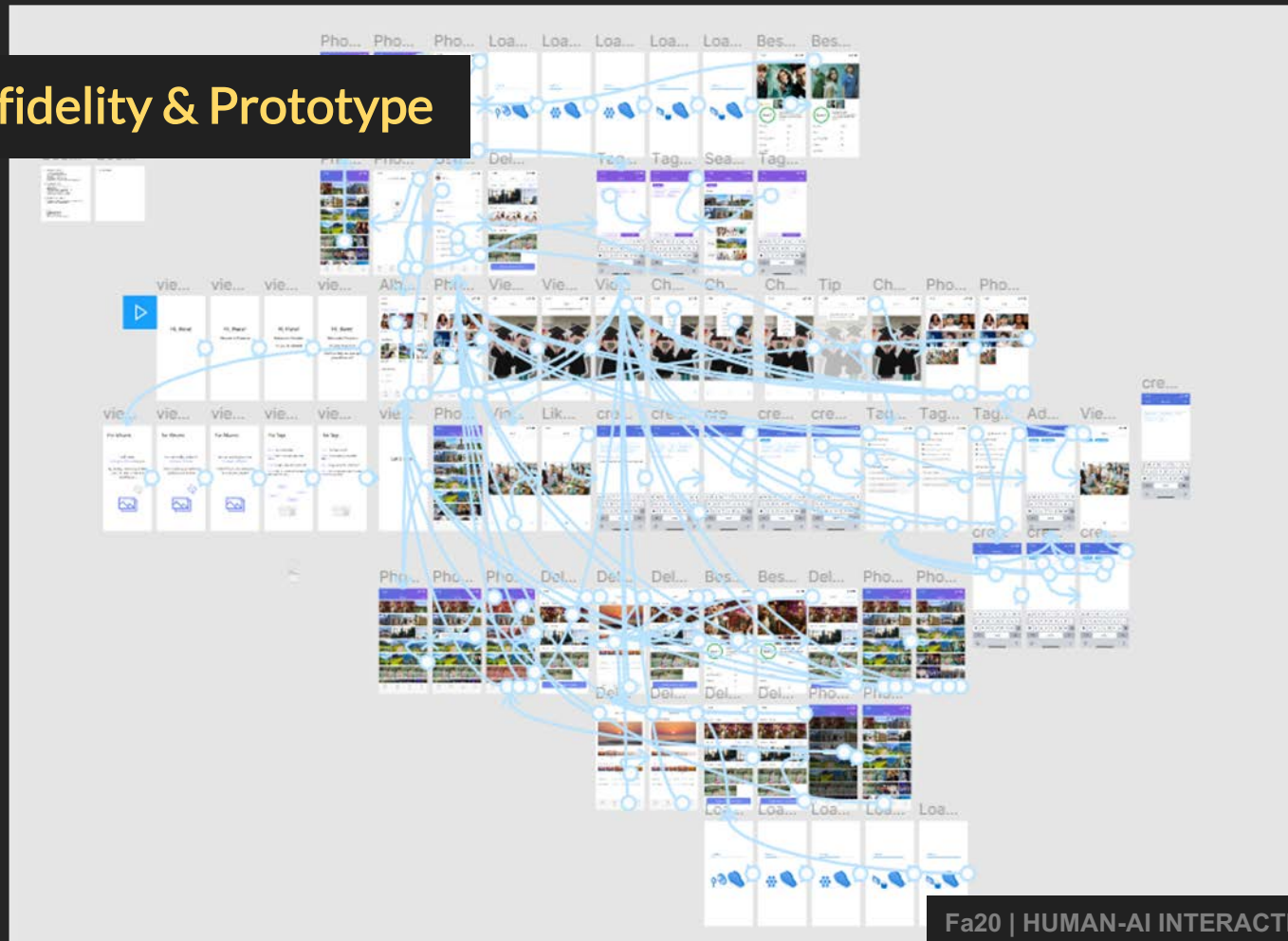Loyal — Fickle

Passive — Active

Storyboard

1. Taking pictures.

2. It's difficult to find the best photo in many similar photos.

3. Photobox helps you to detect similar photos and give a recommendation of the best photo.

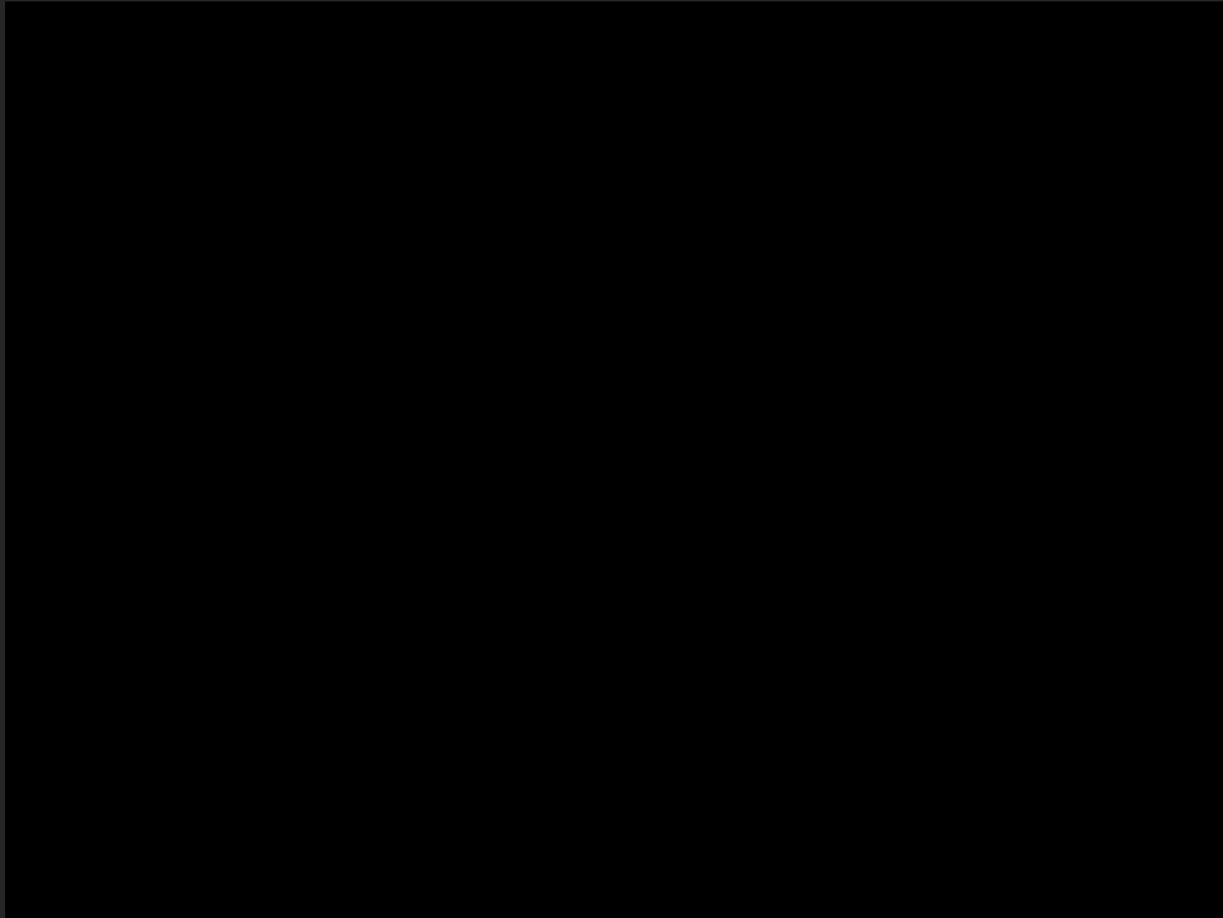4. Upload the photo recommended by AI to social media and get some good feedback.

User Flow

High-fidelity & Prototype

Demo

Solution - Algorithm

Solution: Photo Popularity Prediction Algorithm

Problem to solve:
Given a couple of images (and based on users' profile data), we can recommend one of them which will possibly receive more reactions on social media.

Idea:
Train an algorithm to predict the "Image Popularity" of given images. Then, we can compare their "Image Popularity" and recommend the best one to the user.

Data Source:
We use a Flickr dataset shared by 2020 Image Popularity Prediction Challenge.

Models:
As a regression question, we plan to try Gaussian Naive Bayes, Simple Linear Regression, and Random Forest

Solution: Algorithm - Flickr Dataset

Our Target "Image Popularity":
Social image popularity is a score of the level of engagement achieved by pictures shared through social media platforms

User Related Data	Image Related Data
number of contacts	number of albums
if the user is a professional photographer	number of groups
number of photos	
number of groups	

Solution: Algorithm - Features

Besides Flickr dataset, we extract features from the images themselves:
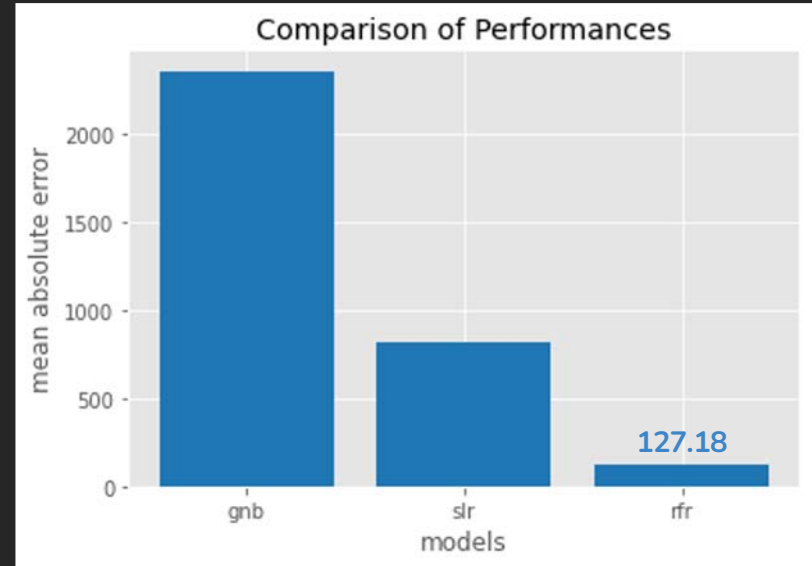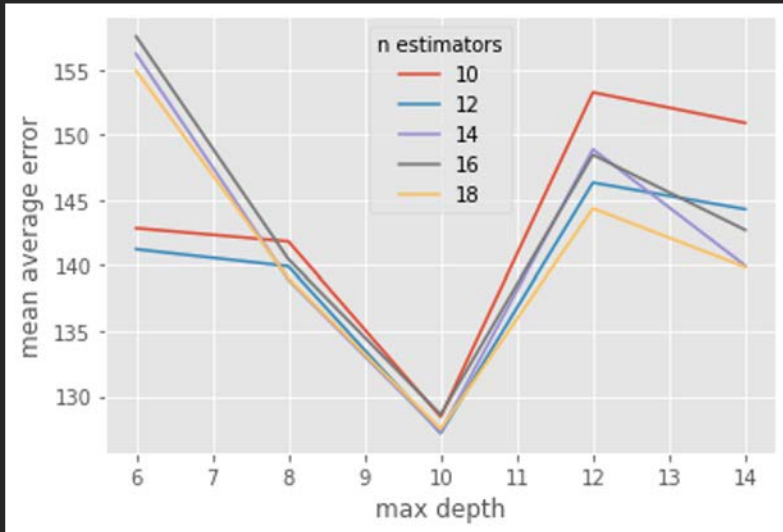
1.   Histograms

2.   Histograms of Oriented Gradients

3.   Object Recognition by imageAI

Solution: Algorithm - Data Issues and Bias

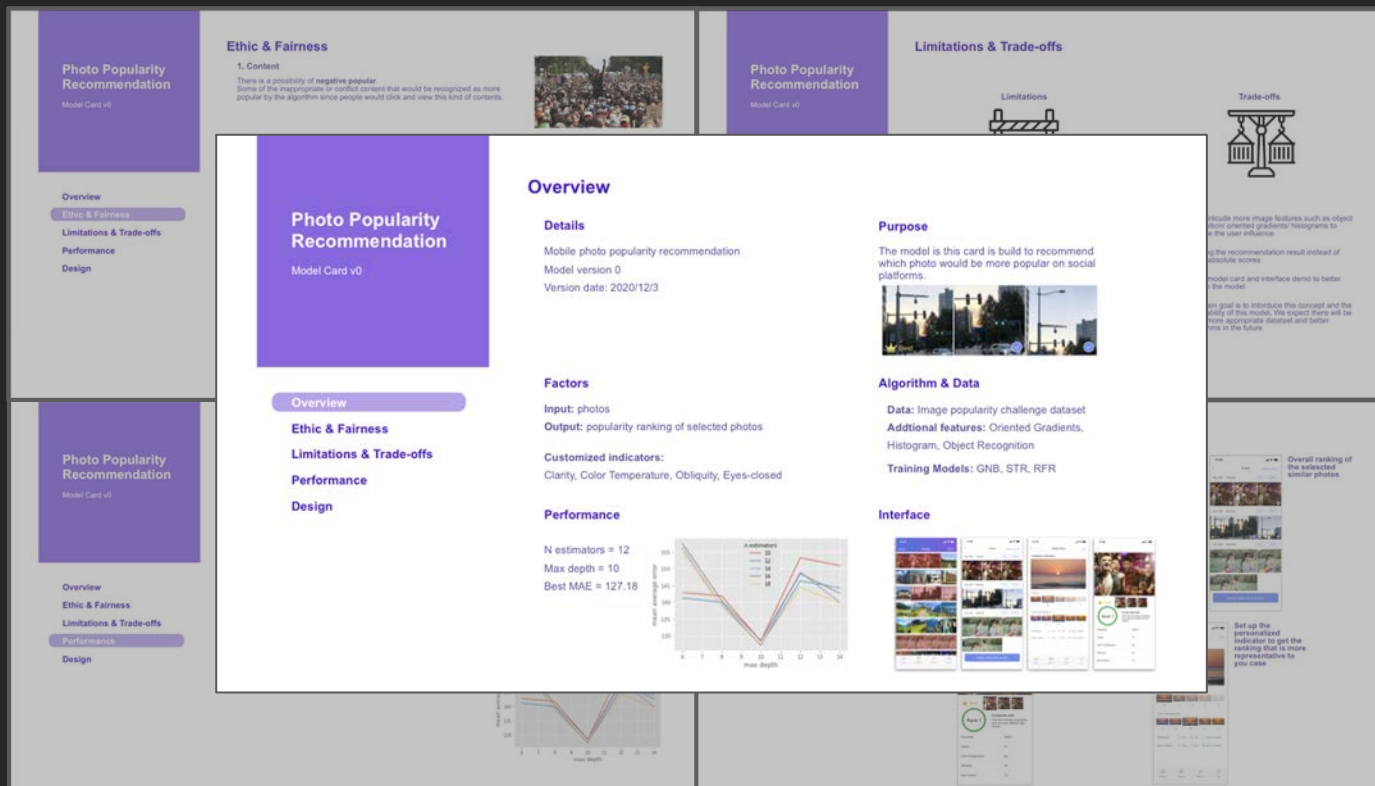Here are the (potential) issues and bias we found:

1. The data source does not provide a clear definition of "Image Popularity"

2. The users own popularity can make huge impacts:
    Justin Bieber or somebody

3. Not sure about the reasons why the images have obtained higher "Image popularity":
    a great photography or a funny meme

4. We need more clues about the groups:
    general popular groups vs focus groups

Solution: Algorithm - Model Performance

Model Card

Model Card

Questions?