# Customized Image Aesthetics Assessment Method and Application on User Profiling

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# Summary of the Proposal

Objective:
- - Develop a customized IAA model for specified images (e.g. postcard scanning).
- - Attempt user profiling with aesthetics patterns.

Method:
- - Use subjective evaluation (e.g. user-generated 'likes') as aesthetic scores.
- - CNN

Applications:
- - Potential uses in social media, e-commerce, and personalized recommendations.

# Introduction

Overview:

- - Image Aesthetics Assessment (IAA) aims to rate the aesthetic quality of images.
- - Traditionally subjective and conducted manually, but automated techniques are gaining importance.

Importance:

- - Automated IAA can enhance user experience in various fields like social media, e-commerce, and personalized recommendations.

# Background -IQA

Image **Quality** Assessment


- Objective approaches.

- Based on image quality measurement, e.g. histogram, blurriness, noise etc.
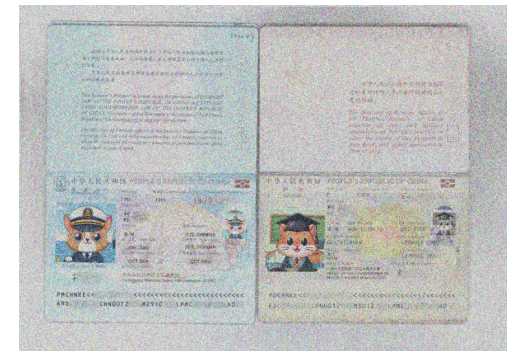
# Background -Quality vs Aesthetics

Image **Aesthetics** Assessment

- Subjective process.

- Evaluate element balance, color harmony, etc.

- Involve personal feelings.

- Might require human evaluators.

# Background and Previous Works

IAA Overview:
- - IAA traditionally involves subjective ratings.
- - Early works used Image Quality Assessment (IQA) techniques. (histogram, etc.)

Advancements:
- - Recent techniques include deep learning features to capture aesthetic qualities.

Previous Models:
- - [1] Ying Dai's ensemble CNN models.
- - [2] Yubin Deng et al.'s experimental survey.
- - [3] Shu Kong et al.'s Photo Aesthetics Ranking Network.

# Previous Works -IAA

[3] Shu Kong et al.'s Photo Aesthetics Ranking Network.

- Used CNN to rank photo aesthetics.
- Based on aesthetic scores and meaningful attributes assigned by multiple human raters

- achieved 77% accuracy on AVA (an aesthetic dataset, highest -83%)

# Previous Works

[3] Shu Kong et al.'s Photo Aesthetics Ranking Network.

# My Goals and Objectives

- Model Development:

  - Creating an IAA model for (customized) images.

  - Predicting aesthetic scores based on user given scores (e.g. 'likes').

  - Enabling automatic scoring for new uploads.


- Application:

  - Utilizing aesthetic scores to generate user profiles

  - Maintaining a recommendation sys based on aesthetic related user profiling.

# Proposed Model

Development:

- - Convolutional Neuron Networks
- - Building on [3]'s work with a focus on postcard images.*
  - * Under discussion, might outdated
  - * Try recent state-of-art works

Customization:

- - Tailoring the model to specific tasks.

Data Source:

- - Benchmark datasets
- - Using images from Postcrossing.com.

# Dataset Sources

- Benchmark datasets:

  - Aesthetics Quality Assessment on AVA

  - Aesthetics and attributes database (AADB) dataset


- Customization/Test/Application:

  - Postcrossing.com*, user 'likes' as score

    *Introduction follows

# Practical Experiment

Experiment:

- - Using postcard cases to test the model's capability.

Customization:

- - Investigating the suitability of customized data (e.g. postcard) for IAA models.

Limited Ratings:

- - Exploring training methods with limited aesthetic ratings.

# Applications

Postcard Community:

- - Automated rating and personalized recommendations.

Broader Uses:

- - Potential applications in social media and e-commerce.

Examples:

- - Enhancing content recommendations and assessing product images.

# Application Example

Experimental application with an online postcard community - *Postcrossing*:

    - A postcard exchange website.
    - Users may post the images of their sending/receiving postcards.
    - Other users may rate the postcard by clicking a "like" button.
         (# of "like" - aesthetics "score"?)

# Postcrossing -Explained
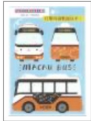
Users give **ratings** to postcards images

Ratings given form **one's aesthetics preference**

# User Profiling with Aesthetic Patterns

- Current Postcrossing workflows
  - No recommendation sys.
  - Randomly pair two person to exchange cards
  - Conflict happens

- Expected workflow involving user profiling
  - Pair users with similar preference

Image uploaded by: yukar. Delete image?

Edit image description

2 favorited this postcard (see who)
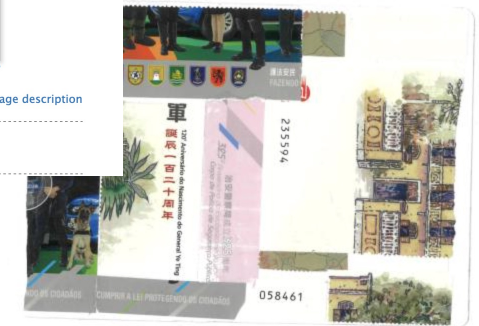
CN–3364902
From jun1990

Image uploaded by: garfieldw33. Delete image?

Example: "recycled/rubbish" postcards
that is not widely accepted among users

# Conclusion

- Proposed Models:
  - CNN
  - (working on …)
- Dataset
  - AVA, AADB
  - Craw from Postcrossing
- Goals:
  - Develop a customized IAA model
  - User profiling with aesthetics patterns.

# References

- [1] Y. Dai, "Building CNN-Based Models for Image Aesthetic Score Prediction Using an Ensemble," Journal of Imaging, vol. 9, no. 2, p. 30, Feb. 2023.

- [2] Y. Deng, C. C. Loy, and X. Tang, "Image Aesthetic Assessment: An experimental survey," IEEE Signal Processing Magazine, vol. 34, no. 4, pp. 80–106, Jul. 2017.

- [3] S. Kong, X. Shen, Z. Lin, R. Mech, and C. Fowlkes, "Photo Aesthetics Ranking Network with Attributes and Content Adaptation," Computer Vision – ECCV 2016.

# Q & A