

Haoming Cai

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EDUCATION

The Chinese University of Hong Kong, Shenzhen.

Sep 2017 - May 2022

Computer Science and Engineering, Bachelor School of Data Science

Shenzhen

- Relevant Coursework: Linear Algebra, Introduction to Multimedia Systems, Fundamentals of Artificial Intelligence

RESEARCH INTERESTS

Image Restoration, Deep Learning, Image Quality Assessment

PAPER

■ PIPAL : a Large-Scale Image Quality Assessment Dataset for Perceptual Image Restoration.

Sep 2019 - Sep 2020

- Jinjin Gu, [Haoming Cai](#), Haoyu Chen, Xiaoxing Ye, Jimmy S. Ren, Chao Dong
- European Conference on Computer Vision (ECCV), 2020

INTERNSHIP EXPERIENCE

ShenZhen Key Lab of Computer Vision and Pattern Recognition, SIAT-SenseTime Joint Lab,
Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences

May 2020 - May 2021

- Supervised by [Prof. Chao Dong](#) and work closely with [Ph.D. Jinjin Gu](#). More in [X-Pixel Group](#)
- Interactive Multi-Dimension Modulation with Dynamic Control for Image Restoration
- Interpretability of Deep Learning in Image Processing field

RESEARCH PROJECT

■ PROJECT : Perceptual Image Restoration:

Sep 2019 - Present

- **Keywords:** IQA dataset, distortion of GAN type, ELO and Swiss rating system

- **Description :**

- We contributed a novel perceptual similarity dataset called PIPAL to study the new distortions brought by GAN technology. By employing a new rating system, PIPAL not only obtains more reliable and probability-based human rating of image quality scores after 670k human judgments, but also provides feasibly extendable characteristics. In addition to the traditional distortions' types, PIPAL contains outputs of abundant image restoration algorithm. In particular, compared to existing datasets, it's the first time an IQA dataset absorbs the outputs of GAN-based algorithms. The existing outcome shows there is still a huge inconsistency between high numerical performance and perceptual performance, especially on the output of GAN type distortion. By training on PIPAL, improved IQA has great potential to guide existing SR algorithms to reconstruct the more visual-friendly high-quality images.

■ PROJECT : NTIRE2021 Perceptual Image Quality Assessment Challenge:

Dec 2020 - Apr 2021

- **Position :** The organizer of the Perceptual IQA Challenge

- **Description :**

- Find more in [NTIRE2021 Perceptual Image Quality Assessment Challenge](#)
- Perceptual image quality assessment is the task of predicting the perceptual quality of an image based on a set of prior examples of images and their perceptual quality labels. The challenge uses a new dataset and has a single track. The aim is to obtain a network design/solution capable to produce high-quality results with the best correlation to the reference ground truth.

COMPETITION EXPERIENCE

■ AI in RTC-Super Resolution Image Quality Competition

Jul 2019 - Sep 2019

- **Organization** : DataCastle

- **Description** :

- Combined with different network components and training strategies, the final resulting trained model obtained a relatively good performance on testing dataset of competition and finally beat 72 percent competitors on perceptual index (PI).

SKILLS

- **Programming Language** : Python, C/C++, MATLAB, LaTeX

- **Deep Learning Package** : PyTorch, Caffe