Analyzing and Combating Attribute Bias for Face Restoration

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Paper code link: https://github.com/Seeyn/DebiasFR

CONTRIBUTIONS
- Observe attribute bias in face restoration
- Analyze and trace it to two main causes
- Propose DebiasFR, which faithfully preserves input attribute information and produces quality HR faces

MOTIVATION
- Attribute Bias: Key face attributes are dramatically different

OBSERVATIONS
- Two leading causes
  - Lack of attribute information – Degradation is unavoidable
  - Training data prior – Hard to collect a large dataset with balanced attribute distribution
  - Attribute information loses as image resolution decreases
  - Observe attribute bias in face restoration
  - Analyze and trace it to two main causes
  - Propose DebiasFR, which faithfully preserves input attribute information and produces quality HR faces

METHOD
- Architecture Design
- Consists of encoder, decoder, attribute representation
- Adjust the representation weights ($\alpha, \beta$) to change the restored face attributes
- Randomly initialize and update the representations during training

EXPERIMENTS
- Comparison
  - Architecture Design
  - Consists of encoder, decoder, attribute representation
  - Adjust the representation weights ($\alpha, \beta$) to change the restored face attributes
  - Randomly initialize and update the representations during training

CONTRIBUTIONS
- Age
- Gender