

Scalable End-to-end Quality Control in Approximate Computing

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User-centric Application

Image
compression

User-centric
Application



Quality
Metric

Image
compression

Average Pixel
Error Rate



Image
compression

Average Pixel
Error Rate

User
Satisfaction



Image
compression

Average Pixel
Error Rate

User
Satisfaction

User-centric
Application



Human
Perception

Image
compression

Quality
Score
(QScore)

[Wang et al., 2004]
[Seshadrinathan et al., 2010]

User-centric
Application

Quality
Assessment
Model

Human
Perception

Image
compression

QScore = $f(\text{image})$

Quality
Score
(QScore)

[Wang et al., 2004]
[Seshadrinathan et al., 2010]

User-centric
Application



Quality
Assessment
Model



Human
Perception

Image
compression

$$QScore = f(\text{image})$$

Quality
Score
(QScore)



Image

Image Model

Image QScore

Audio

Audio Model

Audio QScore

Video

Video Model

Video QScore

Text

Text Model

Text QScore