

Quality Assessment for Computer Vision Applications (QACoViA)

May 5-9 2025



Mission

To study the visual quality requirements for computer vision (including LMM) methods

Background (1/2)

Methods for visual quality assessment are used to estimate or mimic human judgement when rating the quality of visual media for general purpose.

These methods are not necessarily appropriate when the final observer is a computer vision algorithms, notably performing a specific task (e.g.: recognition tasks ...).

Background (2/2)

Correct estimation of video processing pipeline performance under various conditions is still a significant research challenge in Computer Vision (CV). Responding to this need, the goal of the group is to study:

- Testing methodologies and frameworks to identify the limit of CV methods with respect to the visual quality of the ingest
- Minimum quality requirements and objective visual quality measure to estimate if a visual content is the operating region of CV
- To deliver implementable algorithms being proof/demonstrate of the new proposal concept of an objective video quality assessment methods for recognition tasks

QACoVia vs SOGA?

QACoVia at the age of Foundation Models

⇒ Benchmark of task based algo (semantic segmentation, spatio temporal tracking, pose estimation, task recognition ...)

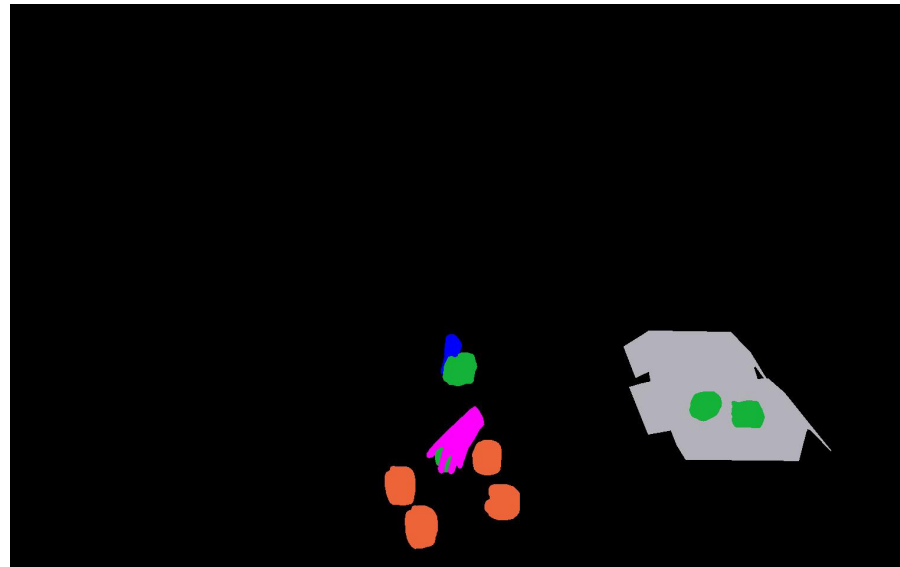
⇒ Quality: compression and resolution ...and complexity

⇒ Set of KPIS

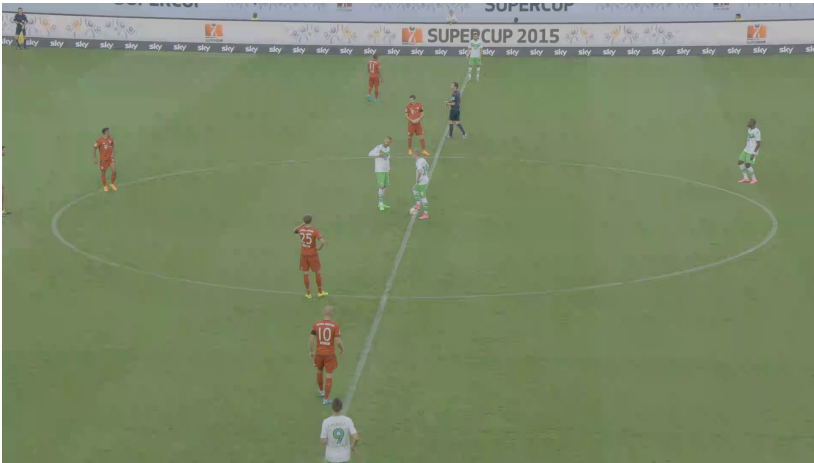
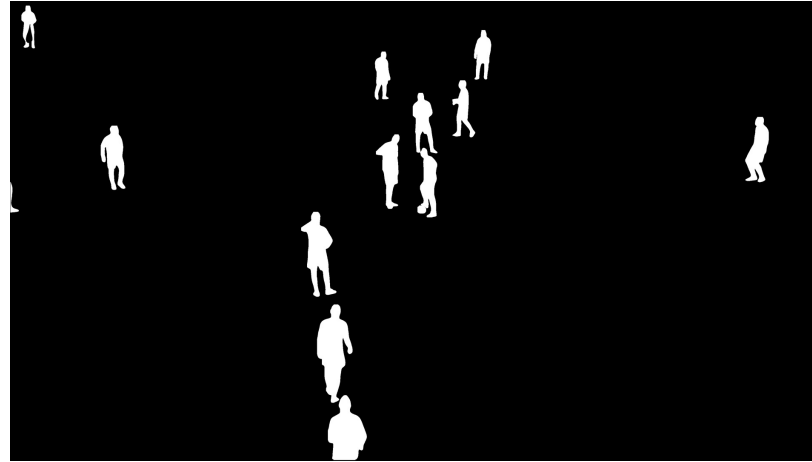
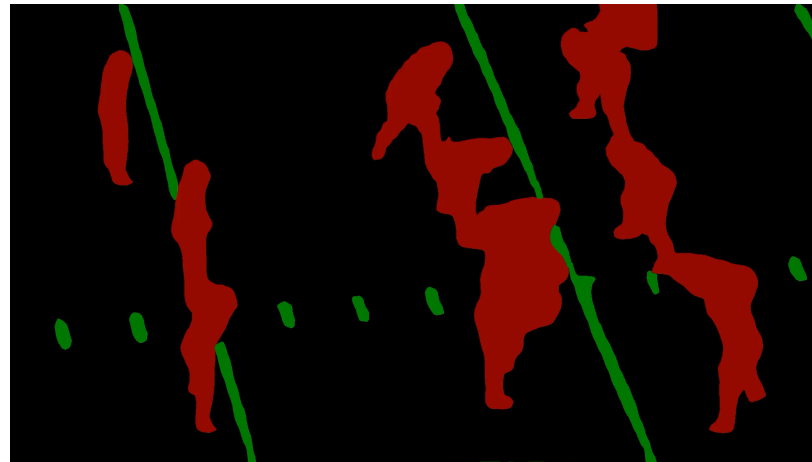
⇒ datasets

⇒ Benchmark report

Dataset (I) NantesU/CEA



Dataset (II) Nantes U



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⇒ KPIS

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Emerging Focused Use Case: Underwater Image

AGH, Nantes Université, OUC

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Multimedia in Underwater Information Processing and Exploration

Nantes, France
June 30 to July 4, 2025
Jointly with ICME 2025



Recent Publications

- Comparative Performance Analysis of Deep Learning Architectures in Underwater Image Classification.) Mehrunnisa, Zhang, Y., Juszka, D., & Leszczuk, *Conference on Radiocommunications and ICT (KRiT 2024*
- ERD: Encoder-Residual-Decoder Neural Network for Underwater Image Enhancement J Cao, W Peng, Y Liu, J Dong, P Le Callet, S Kwong, *IEEE Transactions on Circuits and Systems for Video Technology*, 2025
- Utility-Centered Underwater Image Quality EvaluationW Chen, H Liao, R Lin, T Zhao, K Gu, P Le Callet, *IEEE Journal of Oceanic Engineering*, 2024
- UIF: An objective quality assessment for underwater image enhancementY Zheng, W Chen, R Lin, T Zhao, P Le Callet, *IEEE Transactions on Image Processing* 31, 2022

Co-Chairs

Questions should be addressed to:

- Mikołaj Leszczuk (mikolaj.leszczuk@agh.edu.pl)
- Patrick Le Callet (patrick.lecallet@polytech.univ-nantes.fr)
- Lu Zhang (lu.ge@insa-rennes.fr)