

# JEG-Hybrid

Joint Effort Group on the development/research of  
generally applicable hybrid video quality assessment algorithms

## STATUS UPDATE

VQEG SPRING 2021 MEETING

# JEG-HYBRID GROUP: MISSION

- To develop a generally applicable no reference Hybrid Perceptual/Bit-Stream model
- With a small set of subjective experiments
  - Limited training possibilities
  - Limited validation
- Currently
  - Large scale DB with 60,000+ PVS (no losses) and 500,000+ PVS with distortion due to packet losses, many full-reference objective quality measures
  - Machine Learning models derived from trying to model individual observers

# CURRENT ACTIVITIES: AI-BASED OBSERVERS

- Working on designing NN-based virtual observers (AI Observers) starting from existing subjectively-annotated image and video datasets;
- Key point: modeling SINGLE observers, which should allow to consider also their expectation;
- Previous work used shallow NN on video content *and DNN on still images*;
- *Next steps:*
  - Designing DNN-based AI Observers for video and comparing them to actual ones in terms of bias, inconsistency and MOS prediction;
  - Designing subjective tests tailored for the training of AI Observers.

# CURRENT ACTIVITIES: HODOR PROJECT WITH THE SKY GROUP AND AFFILIATES

- Key outcome: A measure that could allow to automatically identify PVSs for which VQMs are likely to deliver inaccurate MOS estimation
- Currently we are summarizing the activities in a scientific publication

# PUBLICATIONS

- L. Fotio Tiotsop, T. Mizdos, M. Barkowsky, P. Pocta, A. Servetti, E. Masala, "*Mimicking individual media quality perception with neural network based artificial observers*", accepted for publication in ACM Transactions on Multimedia Computing, Communications, and Applications
- L. Fotio Tiotsop, T. Mizdos, M. Uhrina, M. Barkowsky, P. Pocta, E. Masala, "*Modeling and estimating the subjects' diversity of opinions in video quality assessment: a neural network based approach*", Multimedia Tools and Applications (Springer), 2020
- L. Fotio Tiotsop, F. Agboma, G. Van Wallendael, A. Aldahdooh, S. Bosse, L. Janowski, M. Borkowsky, E. Masala, "*On the Link between Subjective Score Prediction and Disagreement of Video Quality Metrics*", IEEE Access (to be submitted, 2021).
- L. Fotio Tiotsop, A. Servetti, T. Mizdos, P. Pocta, G. Van Wallendael, M. Borkowsky, E. Masala, "*Deep Neural Networks based Artificial Observers for No Reference Image Quality Assessment*", IEEE Transactions on Image Processing (submitted, Dec 2020).

# WHERE CAN I GET MORE INFORMATION?

- Biweekly meetings (next: Jun 17, 2021)  
<https://conf.dfn.de/webapp/conference/97980178>
- <http://vqegjeg.intec.ugent.be/wiki/>  
(notably section resources, constantly updated, volunteers welcome!)

How may I get involved?

- Subscribe to the VQEG-JEG mailing list: [jeg@vqeg.org](mailto:jeg@vqeg.org)  
<http://www.its.bldrdoc.gov/vqeg/email-reflectors.aspx>
- Join our biweekly conference call