

# **2015 Seventh International Workshop on Quality of Multimedia Experience**

**(QoMEX 2015)**

**Pilos, Messinia, Greece  
26-29 May 2015**



**IEEE Catalog Number: CFP15QOM-POD  
ISBN: 978-1-4799-8959-1**

# TABLE OF CONTENTS

<b>QUANTIFYING THE IMPACT OF NETWORK BANDWIDTH FLUCTUATIONS AND OUTAGES ON WEB QOE</b> .....	1
<i>Sackl, Andreas ; Casas, Pedro ; Schatz, Raimund ; Janowski, Lucjan ; Irmer, Ralf</i>	
<b>COMPENSATING FOR TYPE-I ERRORS IN VIDEO QUALITY ASSESSMENT</b> .....	7
<i>Brunnstrom, Kjell ; Tavakoli, Samira ; Sogaard, Jacob</i>	
<b>SOA THRESHOLDS FOR THE PERCEPTION OF DISCRETE/CONTINUOUS TACTILE STIMULATION</b> .....	9
<i>Eid, Mohamad ; Korres, Georgios ; Jensen, Camilla Birgitte Falk</i>	
<b>NEW STEREO VISUAL COMFORT ASSESSMENT METHOD BASED ON SCENE MODE CLASSIFICATION</b> .....	15
<i>Ying, Hongwei ; Jiang, Gangyi ; Yu, Mei ; Shao, Feng ; Peng, Zongju ; Yang, You</i>	
<b>QOE IN THE WEB: A DANCE OF DESIGN AND PERFORMANCE</b> .....	21
<i>Varela, Martin ; Skorin-Kapov, Lea ; Maki, Toni ; Hosfeld, Tobias</i>	
<b>A QOE STUDY OF DIFFERENT STREAM AND LAYOUT CONFIGURATIONS IN VIDEO CONFERENCING UNDER LIMITED NETWORK CONDITIONS</b> .....	28
<i>Gunkel, Simon N.B. ; Schmitt, Marwin ; Cesar, Pablo</i>	
<b>A TWO-STAGE POWER AND QOS AWARE DYNAMIC SPECTRUM ASSIGNMENT SCHEME FOR COGNITIVE WIRELESS SENSOR NETWORKS</b> .....	34
<i>Stamatakis, George ; Tragos, Elias Z. ; Tragantitis, Apostolos</i>	
<b>A STUDY ON ORDER EFFECT IN A SUBJECTIVE EXPERIMENT ON STEREOSCOPIC VIDEO QUALITY</b> .....	40
<i>Juszcza, Dawid ; Papir, Zdzislaw</i>	
<b>QUALITY EVALUATION OF HEVC AND VP9 VIDEO COMPRESSION IN REAL-TIME APPLICATIONS</b> .....	46
<i>Rerabek, Martin ; Hanhart, Philippe ; Korshunov, Pavel ; Ebrahimi, Touradj</i>	
<b>SHAPING QOE IN THE 5G ECOSYSTEM</b> .....	52
<i>Liotou, Eirini ; Elshaer, Hisham ; Schatz, Raimund ; Irmer, Ralf ; Dohler, Mischa ; Passas, Nikos ; Merakos, Lazaros</i>	
<b>OBJECTIVE QUALITY ASSESSMENT FOR IMAGE RETARGETING BASED ON HYBRID DISTORTION POOLED MODEL</b> .....	58
<i>Lin, Jianxin ; Zhu, Lingling ; Chen, Zhibo ; Chen, Xiaoming</i>	
<b>EFFECT OF BEING OBSERVED ON THE RELIABILITY OF RESPONSES IN CROWDSOURCING MICRO-TASK PLATFORMS</b> .....	64
<i>Naderi, Babak ; Wechsung, Ina ; Moller, Sebastian</i>	
<b>ON THE APPROXIMATION OF ISP AND USER UTILITIES FROM QUALITY OF EXPERIENCE</b> .....	66
<i>Zwickl, Patrick ; Reichl, Peter ; Skorin-Kapov, Lea ; Dobrijevic, Ognjen ; Sackl, Andreas</i>	
<b>THE UNEXPECTED QOE KILLER: WHEN THE NETWORK EMULATOR MISSHAPES TRAFFIC AND QOE</b> .....	72
<i>Hosfeld, Tobias ; Fiedler, Markus</i>	
<b>SUBJECTIVE QUALITY OF WEBPAGE LOADING: THE IMPACT OF DELAYED AND MISSING ELEMENTS ON QUALITY RATINGS AND TASK COMPLETION TIME</b> .....	78
<i>Guse, Dennis ; Schuck, Sebastian ; Hohlfeld, Oliver ; Raake, Alexander ; Moller, Sebastian</i>	
<b>A METHOD FOR FEEDBACK DELAY MEASUREMENT USING A LOW-COST ARDUINO MICROCONTROLLER: LESSON LEARNED: DELAY INFLUENCED BY VIDEO BITRATE AND GAME-LEVEL</b> .....	84
<i>Beyer, Justus ; Varbelow, Richard ; Antons, Jan-Niklas ; Zander, Steffen</i>	
<b>SUBJECTIVE ASSESSMENT OF THE PERCEIVED QUALITY OF VIDEO CALLING SERVICES OVER A REAL LTE/4G NETWORK</b> .....	86
<i>Ndiaye, M. ; Larabi, M.-C. ; Saadane, H. ; Le Lay, G. ; Perrine, C. ; Quinquis, C. ; Gros, L.</i>	
<b>AN SDN-BASED VIRTUAL CELL FRAMEWORK FOR ENHANCING THE QOE IN TD-LTE PICO CELLS</b> .....	92
<i>Costanzo, Salvatore ; Shrivastava, Rudraksh ; Xenakis, Dionysis ; Samdanis, Konstantinos ; Grace, David ; Merakos, Lazaros</i>	
<b>IDENTIFYING AESTHETIC HIGHLIGHTS IN MOVIES FROM CLUSTERING OF PHYSIOLOGICAL AND BEHAVIORAL SIGNALS</b> .....	98
<i>Kostoulas, Theodoros ; Chanel, Guillaume ; Muszynski, Michal ; Lombardo, Patrizia ; Pun, Thierry</i>	

<b>SUBJECTIVE EVALUATION OF SUPER MULTIVIEW VIDEO IN CONSUMER 3D DISPLAYS</b> .....	104
<i>Carballeira, Pablo ; Gutierrez, Jesus ; Moran, Francisco ; Cabrera, Julian ; Garcia, Narciso</i>	
<b>TCD-VOIP, A RESEARCH DATABASE OF DEGRADED SPEECH FOR ASSESSING QUALITY IN VOIP APPLICATIONS</b> .....	110
<i>Harte, Naomi ; Gillen, Eoin ; Hines, Andrew</i>	
<b>CONCEPTUAL MODEL OF MULTIPARTY CONFERENCING AND TELEMEETING QUALITY</b> .....	116
<i>Skowronek, Janto ; Raake, Alexander</i>	
<b>ON THE IMPACT OF VIDEO STALLING AND VIDEO QUALITY IN THE CASE OF CAMERA SWITCHING DURING ADAPTIVE STREAMING OF SPORTS CONTENT</b> .....	122
<i>Staelens, Nicolas ; Coppens, Paulien ; Van Kets, Niels ; Van Wallendaef, Glenn ; Van den Broeck, Wendy ; De Cock, Jan ; De Turek, Filip</i>	
<b>INFLUENCE OF HDR REFERENCE ON OBSERVERS PREFERENCE IN TONE-MAPPED IMAGES EVALUATION</b> .....	128
<i>Krasula, Lukas ; Narwaria, Manish ; Fliegel, Karel ; Le Callet, Patrick</i>	
<b>AUTOMATIC DETECTION OF FLASHING VIDEO CONTENT</b> .....	134
<i>Carreira, Lucia ; Rodrigues, Nelson ; Roque, Bruno ; Queluz, Maria Paula</i>	
<b>QUALITY ASSESSMENT OF ADAPTIVE BITRATE VIDEOS USING IMAGE METRICS AND MACHINE LEARNING</b> .....	140
<i>Sogaard, Jacob ; Forchhammer, Soren ; Brunnstrom, Kjell</i>	
<b>AN SDN QOE-SERVICE FOR DYNAMICALLY ENHANCING THE PERFORMANCE OF OTT APPLICATIONS</b> .....	142
<i>Liotou, Eirini ; Tseliou, Georgia ; Samdanis, Konstantinos ; Tsolkas, Dimitris ; Adelantado, Ferran ; Verikoukis, Christos</i>	
<b>IS ONE SECOND ENOUGH? EVALUATING QOE FOR INTER-DESTINATION MULTIMEDIA SYNCHRONIZATION USING HUMAN COMPUTATION AND CROWDSOURCING</b> .....	144
<i>Rainer, Benjamin ; Petscharnig, Stefan ; Timmerer, Christian ; Hellwagner, Hermann</i>	
<b>AUTOMATIC REAL-TIME 2D-TO-3D CONVERSION FOR SCENIC VIEWS</b> .....	150
<i>Wafa, A. ; Nasiopoulos, P. ; Leung, V.C. ; Pourazad, Mahsa T.</i>	
<b>ANNOYANCE AND ACCEPTABILITY OF VIDEO SERVICE RESPONSIVENESS</b> .....	155
<i>Quintero, Miguel A.Ros ; Zachey, Benjamin ; Raake, Alexander</i>	
<b>HOW DO NEW VISUAL IMMERSIVE SYSTEMS INFLUENCE GAMING QOE? A USE CASE OF SERIOUS GAMING WITH OCULUS RIFT</b> .....	161
<i>Hupont, Isabelle ; Gracia, Joaquin ; Sanagustin, Luis ; Gracia, Miguel Angel</i>	
<b>SUBJECTIVE QUALITY OF VIDEOS DISPLAYED WITH LOCAL BACKLIGHT DIMMING AT DIFFERENT PEAK WHITE AND AMBIENT LIGHT LEVELS</b> .....	167
<i>Mantel, Claire ; Korhonen, Jari ; Forchhammer, Soren ; Pedersen, Jesper ; Bech, Soren</i>	
<b>THE ROLE OF EMOTION AND ENJOYMENT FOR QOE — A CASE STUDY OF A SCIENCE CENTRE INSTALLATION</b> .....	173
<i>Tjostheim, Ingvar ; Leister, Wolfgang ; Schulz, Trenton ; Larssen, Andreas</i>	
<b>SUBJECTIVE INSIGHTS FROM TIME AND PLACE SHIFTERS IN ASSESSING TEMPORAL QUALITY OF EXPERIENCE</b> .....	179
<i>Vandenbroucke, Karel ; Castellar, Elena Patricia Nunez ; De Marez, Lieven</i>	
<b>SUBJECTIVE QUALITY ASSESSMENT COMPARING UHD AND HD RESOLUTION IN HEVC TRANSMISSION CHAINS</b> .....	181
<i>Berger, Kongfeng ; Koudota, Yao ; Barkowsky, Marcus ; Le Callet, Patrick</i>	
<b>PERCEPTUAL VIDEO QUALITY ESTIMATION BY REGRESSION WITH MYOPIC EXPERTS</b> .....	187
<i>Giotas, Vasileios ; Deligiannis, Nikos ; Fisher, Pam ; Andreopoulos, Yiannis</i>	
<b>DEPTH CODING AND PERCEIVED QUALITY FOR 3D VIDEO</b> .....	193
<i>Calemme, Marco ; Cagnazzo, Marco ; Pesquet-Popescu, Beatrice</i>	
<b>MPEG-DASH USERS' QOE: THE SEGMENT DURATION EFFECT</b> .....	195
<i>Sideris, A. ; Markakis, E. ; Zotos, N. ; Pallis, E. ; Skianis, C.</i>	
<b>PREDICTING FULL-REFERENCE VIDEO QUALITY MEASURES USING HEVC BITSTREAM-BASED NO-REFERENCE FEATURES</b> .....	201
<i>Shahid, Muhammad ; Panasiuk, Joanna ; Van Wallendaef, Glenn ; Barkowsky, Marcus ; Lovstrom, Benny</i>	
<b>SUBJECTIVE QUALITY ASSESSMENT DATABASE OF HDR IMAGES COMPRESSED WITH JPEG XT</b> .....	203
<i>Korshunov, Pavel ; Hanhart, Philippe ; Richter, Thomas ; Artusi, Alessandro ; Mantiuk, Rafal ; Ebrahimi, Touradj</i>	
<b>USING ELECTROENCEPHALOGRAPHY AND SUBJECTIVE SELF-ASSESSMENT TO MEASURE THE INFLUENCE OF QUALITY VARIATIONS IN CLOUD GAMING</b> .....	209
<i>Beyer, Justus ; Varbelow, Richard ; Antons, Jan-Niklas ; Moller, Sebastian</i>	

<b>REVEALING THE DARK SIDE OF A SUBJECTIVE STUDY: LEARNINGS FROM NOISE AND SHARPNESS RATINGS.....</b>	<b>215</b>
<i>Saad, Michele A. ; Corriveau, Philip ; Jaladi, Ramesh</i>	
<b>AT HOME IN THE LAB: ASSESSING AUDIOVISUAL QUALITY OF HTTP-BASED ADAPTIVE STREAMING WITH AN IMMERSIVE TEST PARADIGM.....</b>	<b>220</b>
<i>Robitza, Werner ; Garcia, Marie Neige ; Raake, Alexander</i>	
<b>ON THE ACCURACY OF SHORT-TERM QUALITY MODELS FOR LONG-TERM QUALITY PREDICTION.....</b>	<b>226</b>
<i>Garcia, Marie Neige ; Robitza, Werner ; Raake, Alexander</i>	
<b>IMPACT OF PERCEIVED QUALITY AND OTHER INFLUENCING FACTORS ON EMOTIONAL VIDEO EXPERIENCE.....</b>	<b>232</b>
<i>Antons, Jan-Niklas ; Arndt, Sebastian ; De Moor, Katrien ; Zander, Steffen</i>	
<b>A COMPUTATIONAL MODEL FOR PERCEPTION OF STEREOSCOPIC WINDOW VIOLATIONS.....</b>	<b>238</b>
<i>Poulakos, Steven ; Monroy, Rafael ; Aydin, Tunc ; Wang, Oliver ; Smolic, Aljoscha ; Gross, Markus</i>	
<b>DESIGN AND STORYTELLING CONCEPTS IN THE QUALITY OF EXPERIENCE.....</b>	<b>244</b>
<i>Mansilla, Wendy Ann ; Perkis, Andrew</i>	
<b>USER FORCE PROFILE OF REPETITIVE HAPTIC TASKS INDUCING FATIGUE.....</b>	<b>250</b>
<i>Hamam, Abdelwahab ; Saddik, Abdulmotaleb El</i>	
<b>COGNITIVE NO-REFERENCE VIDEO QUALITY ASSESSMENT FOR MOBILE STREAMING SERVICES.....</b>	<b>256</b>
<i>Vega, Maria Torres ; Giordano, Emanuele ; Mocanu, Decebal Constantin ; Tjondronegoro, Dian ; Liotta, Antonio</i>	
<b>EFFECTS OF VISUAL LATENCY ON VISUAL-HAPTIC EXPERIENCE OF STIFFNESS.....</b>	<b>262</b>
<i>Wu, Bing ; Sim, Sung Hun ; Enquobahrie, Andinet ; Ortiz, Ricardo</i>	
<b>THE CP-QAE-I: A VIDEO DATASET FOR EXPLORING THE EFFECT OF PERSONALITY AND CULTURE ON PERCEIVED QUALITY AND AFFECT IN MULTIMEDIA.....</b>	<b>268</b>
<i>Guntuku, Sharath Chandra ; Scott, Michael James ; Yang, Huan ; Ghinea, Gheorghita ; Lin, Weisi</i>	
<b>INFLUENCE OF SPATIAL COMPLEXITY AND ROOM ACOUSTIC DISPARITY ON PERCEPTION OF QUALITY FEATURES USING A BINAURAL SYNTHESIS SYSTEM.....</b>	<b>275</b>
<i>Werner, Stephan ; Klein, Florian ; Brandenburg, Karlheinz</i>	
<b>WHAT YOUR PHONE MAKES YOU SEE: INVESTIGATION OF THE EFFECT OF END-USER DEVICES ON THE ASSESSMENT OF PERCEIVED MULTIMEDIA QUALITY.....</b>	<b>281</b>
<i>Kara, Peter Andras ; Bokor, Laszlo ; Sackl, Andreas ; Mourao, Mariana</i>	
<b>RULE-BASED COMBINATION OF VIDEO QUALITY METRICS.....</b>	<b>287</b>
<i>Gutierrez, Jesus ; Raake, Alexander ; Argyropoulos, Savvas ; Garcia, Narciso</i>	
<b>A GPU VS CPU PERFORMANCE EVALUATION OF AN EXPERIMENTAL VIDEO COMPRESSION ALGORITHM.....</b>	<b>293</b>
<i>Katsigiannis, Stamos ; Dimitzas, Vasilis ; Maroulis, Dimitris</i>	
<b>ADAPTING OBJECTIVE VIDEO QUALITY METRICS TO AMBIENT LIGHTING.....</b>	<b>299</b>
<i>Kerofsky, Louis ; Vanam, Rahul ; Reznik, Yuriy</i>	
<b>THE EFFECT OF SOUND ON VISUAL REALISM PERCEPTION AND TASK COMPLETION TIME IN A CEL-SHADED SERIOUS GAMING VIRTUAL ENVIRONMENT.....</b>	<b>305</b>
<i>Rojas, David ; Cowan, Brent ; Kapralos, Bill ; Collins, Karen ; Dubrowski, Adam</i>	
<b>VIDEO QUALITY RULER: A NEW EXPERIMENTAL METHODOLOGY FOR ASSESSING VIDEO QUALITY.....</b>	<b>311</b>
<i>Freitas, Pedro Garcia ; Redi, Judith A. ; Farias, Mylene C.Q. ; Silva, Alexandre F.</i>	
<b>TOWARDS A COMPREHENSIVE FRAMEWORK FOR QOE AND USER BEHAVIOR MODELLING.....</b>	<b>317</b>
<i>Reichl, Peter ; Egger, Sebastian ; Moller, Sebastian ; Kilki, Kalevi ; Fiedler, Markus ; Hossfeld, Tobias ; Tsiaras, Christos ; Asrese, Alemnew</i>	
<b>EYE GAZE BEHAVIOR UNDER CHROMATIC IMPAIRMENTS AND QUALITY ASSESSMENT.....</b>	<b>323</b>
<i>Bernardo, Marco V. ; Pinheiro, Antonio M.G. ; Fiadeiro, Paulo T. ; Pereira, Manuela</i>	
<b>EMOTIONAL RESPONSES TO THERMALLY AUGMENTED AUDIOVISUAL STIMULI.....</b>	<b>329</b>
<i>Greiner, Stefan ; Antons, Jan-Niklas ; Wechsung, Ina</i>	
<b>ON THE RETRIEVAL OF PERCEPTUALLY SIMILAR HAPTIC SURFACES.....</b>	<b>335</b>
<i>Strese, Matti ; Schuwerk, Clemens ; Steinbach, Eckehard</i>	
<b>QOE BEYOND THE MOS: ADDED VALUE USING QUANTILES AND DISTRIBUTIONS.....</b>	<b>341</b>
<i>Hosfeld, Tobias ; Heegaard, Poul E. ; Varela, Martin</i>	
<b>DIBR SYNTHESIZED IMAGE QUALITY ASSESSMENT BASED ON MORPHOLOGICAL WAVELETS.....</b>	<b>347</b>
<i>Sandic-Stankovic, Dragana ; Kukulj, Dragan ; Le Callet, Patrick</i>	

<b>THE IMPACT OF VIDEO ENCODING PARAMETERS AND GAME TYPE ON QOE FOR CLOUD GAMING: A CASE STUDY USING THE STEAM PLATFORM</b> .....	353
<i>Slivar, Ivan ; Suznjevic, Mirko ; Skorin-Kapov, Lea</i>	
<b>OPEN ACCESS DATABASE FOR EXPERIMENTAL VALIDATIONS OF HOLOGRAPHIC COMPRESSION ENGINES</b> .....	359
<i>Blinder, David ; Ahar, Ayyoub ; Symeonidou, Athanasia ; Xing, Yafei ; Bruylants, Tim ; Schreites, Colas ; Pesquet-Popescu, Beatrice ; Dufaux, Frederic ; Munteanu, Adrian ; Schelkens, Peter</i>	
<b>QUALITY EVALUATION OF COMPUTATIONAL MODELS FOR MOVIE SUMMARIZATION</b> .....	365
<i>Zlatintsi, A. ; Koutras, P. ; Efthymiou, N. ; Maragos, P. ; Potamianos, A. ; Pastra, K.</i>	
<b>BINOCULAR COMBINATION AND FRACTIONAL DIFFERENTIAL BASED 3D IMAGE QUALITY ASSESSMENT</b> .....	371
<i>Xu, Haiyong ; Jiang, Gangyi ; Yu, Mei ; Zhang, Yun ; Luo, Ting ; Peng, Zongju ; Shao, Feng</i>	
<b>ANALYSING USER SATISFACTION IN NEXT GENERATION NETWORKS FOR MULTIMEDIA MULTICAST TRANSMISSION</b> .....	376
<i>Ahmed, Iffat ; Petlund, Andreas</i>	
<b>VIDEO QUALITY ASSESSMENT AND MACHINE LEARNING: PERFORMANCE AND INTERPRETABILITY</b> .....	382
<i>Sogaard, Jacob ; Forchhammer, Soren ; Korhonen, Jari</i>	
<b>JOURNEY THROUGH THE CROWD: BEST PRACTICES AND RECOMMENDATIONS FOR CROWDSOURCED QOE</b> .....	388
<i>Hosfeld, Tobias ; Redi, Judith</i>	
<b>STESCAL3D: SUBJECTIVE EVALUATION OF HD STEREO VIDEO STREAMING USING H.264 SVC IN DIVERSE LABORATORY ENVIRONMENTS</b> .....	390
<i>Mysirlidis, Charalampos ; Dagiuklas, Tasos ; Rocha, Pedro M.R. ; Da Silva Cruz, Luis A. ; Kotarain, Dino ; Gruicic, Savina ; Domic, Emil ; Skodras, Athanassios</i>	
<b>EFFECTS OF STATIC AND DYNAMIC IMAGE NOISE AND BACKGROUND LUMINANCE ON LETTER CONTRAST THRESHOLD</b> .....	396
<i>Kumcu, Asli ; Platasa, Ljiljana ; Philips, Wilfried</i>	
<b>OPEN PERCEPTUAL BINOCULAR AND MONOCULAR DESCRIPTORS FOR STEREOSCOPIC 3D IMAGES AND VIDEO CHARACTERIZATION</b> .....	398
<i>Lebreton, Pierre ; Raake, Alexander ; Barkowsky, Marcus ; Le Callet, Patrick</i>	
<b>COMPRESSION EFFICIENCY OF HDR/LDR CONTENT</b> .....	404
<i>Azimi, Maryam ; Boitard, Ronan ; Oztas, Basak ; Ploumis, Stelios ; Tohidypour, Hamid Reza ; Pourazad, Mahsa T. ; Nasiopoulos, Panos</i>	
<b>TOWARDS A NEW ITU-T RECOMMENDATION FOR SUBJECTIVE METHODS EVALUATING GAMING QOE</b> .....	410
<i>Moller, Sebastian ; Antons, Jan-Niklas ; Beyer, Justus ; Egger, Sebastian ; Castellar, Elena Nunez ; Skorin-Kapov, Lea ; Suznjevic, Mirko</i>	
<b>Author Index</b>	