Computer-Generated Imagery

Project Report

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General Information

- Started in 2018 meeting in Madrid.
- The main focus is devoted to analyzing and evaluating of computer-generated content with 27 presentations so far.
- Interested people: around 40
- Actively involved institutes
    - Kingston University , Technische Universität Berlin, Dolby Laboratories, Brightcove, Simula, TU Ilmenau, Ericsson, Tencent, University of Texas at Austin

Research Topics

- Gaming quality assessment methodologies
- Development of video quality dataset
- Gaming quality prediction models

Code	Label
Controllability	
CN1	I felt that I had control over my interaction with the system.
CN2	I felt a sense of control over the game interface and input devices.
CN3	I felt in control of my game actions.
Responsiveness	
RE1	I noticed delay between my actions and the outcomes.
RE2	The responsiveness of my inputs was as I expected.
RE3	My inputs were applied smoothly.
Immediate Feedback	
IF1	I received immediate feedback on my actions.
IF2	I was notified about my actions immediately.

- **ITU-T Rec. P.809**: Subjective evaluation methods for gaming quality
  - Development of GIPS questionnaire for interactive cloud gaming quality assessment
- **ITU-T work item P.CrowdG**: Method for assessing gaming QoE using a crowdsourcing approach

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Application information	Passive Datasets		
	CGVDS	GVSET/ KUGVD	HDR Gaming
	Value range, unit	Value range, unit	Value range, unit
Sequence duration (secs)	30	30	10
Screen size	24″	24″	55″
Source Files	15	6	5
Video codec	NVENC	libx264	Libx264, libx265, libaom, libvpx-vp9
Resolution	480p, 720p, 1080p	480p, 720p, 1080p	2160p
Coded video bitrate (kbps)	300-50000	500- 4000	6000, 24000
Frame rate (fps)	20, 30, 60	30	30
Pre-set	llhq	Very fast	veryfast
Encoding Mode	CBR	CBR	CBR

Research Topics

- Gaming quality assessment methodologies
- Development of video quality dataset
- Gaming quality prediction models
  - Video Quality
  - Gaming QoE (Video + Interaction quality)

Signal based model
Nofu, NR-GVSQI, NR-GVQM, DEMI, NDNetGaming

Bitstream payload based model
P.1204.3 FHD, Deep-BVQM

Bitstream header based model
BQGV

Planning model
G.1072, GamingPara, G.OMMOG

Standard Activities

- Creation of **3 work items** in ITU-T SG-12
- ITU-T Rec. G.1032 (10/2017) – G.QoE-gaming:
  - **Influence factors** on gaming quality of experience
- ITU-T Rec. P.809 (05/2018) – P.GAME:
  - **Subjective evaluation** methods for gaming quality
- ITU-T Rec. G.1072 (01/2020) – G.OMG:
  - **Opinion model** for gaming applications

Standard Activities (Ongoing)

- Creation of **3 new work items** in ITU-T SG-12
- ITU-T work item P.BBQCG:
  - Parametric bitstream-based Quality Assessment of Cloud Gaming Services
- ITU-T work item G.OMMOG:
  - Opinion Model for Mobile Online Gaming applications
- ITU-T work item P.CROWDG:
  - Subjective Evaluation of Gaming Quality with a Crowdsourcing Approach

Today’s Presentation

- Subjective and Objective Quality Assessment of UGC Gaming Videos
- Deep-BVQM: A Deep-learning Bitstream-based Video Quality Model
- Domain-Specific Fusion Of Multiple Objective Quality Metrics

Any Feedback or Question!?