GMSys 2023

First International ACM
Green Multimedia Systems Workshop

7-10 June, 2023, Vancouver, Canada

The threat of climate change requires a drastic reduction of global greenhouse gas (GHG) emissions in several societal spheres. Thus, this also applies to reducing and rethinking energy consumption of digital technologies. Video streaming technology is responsible for more than half of digital technology's global impact. There is rapid growth, also now with digital and remote work has become more mainstream, in the amount of video data volume, processing of video content, and streaming which affects the rise of energy consumption and its associated GHG emissions. The processes from video encoding, transmission, decoding, and displaying on the end user's screen require a non-negligible amount of electricity. There is also significant growth in video resolutions and hence higher bitrates, and the fact that this content is ubiquitously accessible anytime and everywhere with mobile devices and through high internet speed (e.g., 5G). These factors altogether inevitably cause a higher consumption of computation, distribution, and transmission resources. Therefore, there is a need to explore methods to make video encoding, transmission, and decoding greener without compromising quality. The International Workshop on Green Multimedia Systems 2023 aims to bring together experts and researchers to present and discuss recent developments and challenges for energy reduction in multimedia systems. This workshop focuses on innovations, concepts, and energy-efficient solutions from video generation to processing, delivery, and further usage.

Content Generation, Processing & Provisioning
- Creation and production tool designs that promote and enable energy efficiency
- Energy usage analysis for video encoding in the cloud
- Tradeoffs between QoE-optimized video encoding and energy consumption
- Energy-efficient management of cloud computing systems
- Resource and energy-efficient job scheduling in cloud computing
- Optimized energy models and resource provisioning for video encoding
- Energy-efficient video encoding across the edge-cloud continuum
- AI-based resource allocation for climate-friendly video encoding
- New cloud platform features (hardware) to improve video encoding energy efficiency
- Energy efficiency in dedicated hardware units (e.g., CPU, GPU) for video encoding

Video Delivery
- Energy usage analysis for video streaming, routers, switches, and network channels
- Design, analysis, and evaluation of adaptive bitrate (ABR) algorithms
- Green video streaming over 5G and 6G networks
- Low-latency, quality, and energy-aware video streaming
- AI and ML approaches for energy efficiency in video communication networks
- Energy efficient video caching distribution at multiple locations, e.g., CDNs
- Green and QoE-driven network management & monitoring, including application layer QoS

Video Consumption & QoE
- Energy usage analysis for decoding and displaying video on user devices
- High perceived video quality at low energy consumption
- Energy-efficient video decoding techniques
- AI approaches for analyzing and influencing user behavior to optimize energy consumption
- User engagement, QoE, and its relation to energy consumption
- Understanding user behavior and habits, e.g., "willingness-to-greener-consumption"
- Empowering users to utilize green multimedia services

Submission Guidelines
- Full/research papers: up to 6 pages, including references
- Short/industry position paper: 1-2 page(s) (+1 for references, if any)
- Papers must include author names and affiliations for single-blind peer reviewing by the program committee, using ACM style format

Important Dates
- Paper Submission: March 10, 2023
- Notification: March 31, 2023
- Camera ready deadline: April 17, 2023

Organizing Committee
- Samira Afzal, Post-Doctoral researcher, Alpen-Adria-Universität Klagenfurt, Austria
- Simone Ferlin-Reiter, Senior performance engineer, Red Hat AB and Karlstad University, Sweden
- Tobias Hoßfeld, Full Professor, Chair of Communication Networks, University of Würzburg, Germany
- Christian Timmerer, Full Professor, Director Christian Doppler Lab ATHENA, Alpen-Adria-Universität Klagenfurt, Austria
- Raimund Schatz, Austrian Institute of Technology, Austria

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