Subject: Quality of Experience in Next-Generation Networks

Leader: Mikołaj Leszczuk

Abstract (max 150 words):

The project explores Quality of Experience (QoE) in next-generation networks, focusing on user-centric metrics for evaluating multimedia services. It combines subjective feedback with objective technical analysis to create advanced models and methods for optimizing QoE. The research addresses challenges posed by diverse and dynamic network conditions, ensuring reliable and satisfying user experiences. Applications range from video streaming, online gaming, to telecommunication services, where QoE insights improve service delivery and user engagement. Key innovations include real-time quality monitoring tools, predictive QoE models for adaptive streaming, and strategies for mitigating the effects of network disruptions. The project is unique in its interdisciplinary approach and potential for disrupting existing QoE standards, offering scalable solutions applicable globally, particularly aligning with Silicon Valley's technological landscape. This comprehensive approach contributes to the development of next-generation systems designed to meet growing user demands and expectations in a digital world.

Related founding:

- Supported by AGH University of Science and Technology initiatives and national research grants focused on telecommunication and multimedia quality assessments.

Related publications:

- "Modeling of Quality of Experience in No-Reference Model"
  Authors: Jakub Nawała, Lucjan Janowski, Mikołaj Leszczuk
  Journal: Journal of Telecommunications and Information Technology, 2017.
- "Recent Developments in Visual Quality Monitoring by Key Performance Indicators"
  Authors: Mikołaj Leszczuk, Mateusz Hanusiak, Mylene C. F. Farias, Emmanuel Wyckens, George Heston
  Journal: Multimedia Tools and Applications, 2016.
- "Assessing Quality of Experience for High-Definition Video Streaming under Diverse Packet Loss Patterns"
  Authors: Mikołaj Leszczuk, Lucjan Janowski, Piotr Romaniak, Zdzisław Papir
  Journal: Signal Processing: Image Communication, 2013.
- "Objective Video Quality Assessment Method for Face Recognition Tasks"
  Authors: Mikołaj Leszczuk, Lucjan Janowski, Jakub Nawała, Atanas Boev
  Journal: Electronics, 2022.
- "Algorithm for Video Summarization of Bronchoscopy Procedures"
  Authors: Mikołaj Leszczuk, Maciej Duplaga
  Journal: Biomedical Engineering Online, 2011.
- "Objective Video Quality Assessment and Ground Truth Coordinates for Automatic License Plate Recognition"
  Authors: Mikołaj Leszczuk, Lucjan Janowski, Jakub Nawała, Jingwen Zhu, Yuding Wang, Atanas Boev
  Journal: Electronics, 2023.
- "Survey on the State-Of-The-Art Methods for Objective Video Quality Assessment in Recognition Tasks"
  Authors: Kamil Kawa, Mikołaj Leszczuk, Atanas Boev
  Conference: International Conference on Multimedia Communications, Services and Security, 2020.
- "Monitoring of Audio-Visual Quality by Key Indicators"
  Authors: Ignacio Blanco Fernández, Mikołaj Leszczuk
  Journal: Multimedia Tools and Applications, 2018.