Sixth IEEE international conference on Image Processing Applications and System

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Al methods of video analysis for human behavior recognition: Session chair: Giorgi Giorgobiani

> Abstract - AI methods of video analysis for human behavior recognition blends powerful AI techniques with real-world applications, creating a field brimming with potential. At its core, deep learning algorithms, like convolutional neural networks (CNNs), are trained to analyze video frames, extracting meaningful features beyond simple object recognition. These networks learn to detect subtle changes in posture, facial expressions, and even subtle movements of the body, uncovering the nuances of human behavior. Recurrent neural networks (RNNs), specifically LSTMs and GRUs, then analyze these features over time, capturing the temporal flow of actions and interactions. This enables the systems to understand not just individual behaviors, but also the context and sequence in which they occur, unlocking a deeper level of comprehension. The applications of this technology are vast: Security systems can leverage it for anomaly detection, identifying potentially suspicious behavior. Marketing and customer service can utilize it for analyzing customer engagement and tailoring experiences. Perhaps most significantly, this field has the potential to revolutionize healthcare, aiding in the early detection and diagnosis of mental health conditions by analyzing subtle behavioral changes, or even personalizing therapeutic interventions based on individual responses. By combining advanced AI techniques with real-world needs, this field promises a future where computers can not only observe human behavior but also understand its complexities and implications.

> The GAIN workshop invites participation in a discussion on "AI methods of video analysis for human behavior recognition." This session, part of the European Union-funded HORIZON EUROPE Twinning project, aims to strengthen Georgia's research capabilities in Artificial Intelligence. The GAIN project, focused on integrating the Muskhelishvili Institute of Computational Mathematics (MICM) into the European research community, investigates the use of AI for understanding human behavior and deep speech analysis. This workshop specifically delves into the application of video analysis techniques to recognize and interpret human behavior, particularly within the context of health and psychiatry.

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