

WEEKLY RESEARCH SEMINAR PRESENTATION

Real-Time Multi-Class Detection of Autism-Related Repetitive Behaviors Using YOLO and Temporal Deep Learning Models.

ABSTRACT



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Autism Spectrum Disorder (ASD) is a neurodevelopmental condition associated with difficulties in social interaction, communication, and repetitive behavioral patterns. Early identification of these behaviors is important for timely intervention; however, conventional assessment methods often require lengthy clinical observation and specialized expertise. This study presents a real-time video-based framework for detecting autism-related repetitive behaviors using computer vision and deep learning techniques. The proposed system combines YOLO-based visual detection with temporal sequence modeling through Long Short-Term Memory (LSTM) and Transformer networks to analyze behavioral changes across video frames. Behavioral categories considered in this work include hand flapping, finger flicking, body rocking, toe walking, covering ears, and other repetitive movements commonly associated with ASD. Experimental evaluation was conducted using annotated behavioral video datasets collected under naturalistic conditions. The results demonstrated strong detection performance, with high precision, recall, and mean average precision achieved across multiple behavioral classes. The framework also showed reliable behavioral localization under variations in lighting conditions, subject pose, and camera perspectives. These findings suggest that the proposed approach can support automated and non-invasive behavioral monitoring for ASD screening in environments such as homes, clinics, and educational settings.

29 May
2026

**10:30 AM - Kigali,
Rwanda Time**

**MODE:
Virtual**

Venue:
UR, College of Science and Technology

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