Validating Saccade Amplitude Measurement with a Webcam-based Eye Tracker

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We validated a webcam-based eye tracker using MediaPipe Face Landmarker for saccades detection against the research-grade eye tracker Tobii Pro Spectrum by comparing saccadic amplitude. Eye movement data from 7 adult participants performing gaze shifts were collected. Bland-Altman analysis showed the webcam systematically over-estimated saccade amplitudes relative to Tobii (mean ± SD of the differences of 1.00º ± 2.15º), demonstrating the potential and limitations of webcam-based eye tracking.

Keywords: eye tracking, saccades, webcam, Mediapipe, Tobii Pro Spectrum