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'Eye Can Reason'- How Eye Parameters Marked one's Performance in a Visual Reasoning Task

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Abstract

Eye tracking systems have the potential of providing efficient, non-intrusive solutions towards the study of human behaviour. This work shows that eye movements may be markers of visual information processing and hence can provide insights into a persons cognitive problem-solving ability and reasoning behaviour. We studied the relationship between performance and eye parameters of individuals for a visual reasoning based problem-solving task. Inter-group analyses revealed fixation duration and peak saccadic velocity as differentiating markers of performance and time. Intra-group studies indicated that the eye parameters acting as performance markers were not the same for all performance groups. A separate marker of 'Visual to Textual Processing Ratio' was defined. Correlating eye parameters with performance could help us develop eye metrics to better mark the cognitive information processing of a person through tests even where performance parameters (like score) are not defined.