

Title: Predicting accuracy in Multiple Object Tracking tasks from trajectory statistics

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Abstract: Cognitive science is an interdisciplinary area covering neuroscience, psychology, linguistics, philosophy, and computer science. Computer science and cognitive science mutually benefit from each other because computer science is very helpful to design and perform experiments in order to understand how the brain works likewise research output from cognitive science can lead to new concepts and models in artificial intelligence. Within cognitive science, Multiple Object Tracking (MOT) paradigm is used to study visual attention. In MOT experiments, participants are required to keep track of some moving objects in parallel. In this study, a data-driven approach is taken in order to explain the tracking performance of the subjects taking part in MOT experiments. The stimuli in MOT known as trajectories or tracks presented in previous studies were taken and the difficulty of those trajectories is quantified based on trajectory statistics. Then a model is created to explain tracking performance and this model is tested in an MOT experiment.

Keywords: Multiple Object Tracking, Prediction, Modelling, Visual Attention