

A task-sensitive, information theoretic approach to modeling eye movement

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It has long been clear that human eye movement is sensitive to a person's goals. Yet there is a paucity of work to develop truly predictive, task-sensitive models of human eye movement. We introduce a new approach to developing a predictive eye movement model. This approach is rooted in information theory, and brings several important factors together, including a person's prior experience with related objects; their immediate task; and the high-acuity center, declining-acuity periphery in primary visual cortex's image representation. Using our approach, it is possible to quantify, in bits, the amount of information a particular sequence of saccades provides for the person's task.