technische universität dortmund

RTG 1855

Sequential sampling models for decision making

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Time: 3:00 pm

Place: Otto-Hahn-Straße 14,

Room: 104

Abstract:

Decision making is a ubiquitous process in living organism for a wide range of problems ranging from basic discrimination tasks to complex preferential choices between options. Over the last decades there have been many systematic attempts to model the processes underlying human decision making. One such approach is signal detection theory which is able to separate response bias from discriminability on the basis of the observed hit and false alarm rates. A major limitation of the classic signal detection model is that it provides a static (fixed sample) description of the decision process, and so it is unable to simultaneously account for choice probabilities and response times (RTs). Sequential sampling models provide a dynamic extension of signal detection theory that elegantly accounts for the systematic relations between choice probabilities and RTs. According to sequential sampling information in sensory or cognitive systems is accumulated sequentially over time until a preset criterion is reached and a response is initiated. Information in this context usually means any changes in the central nervous system that translate perception and cognition into action.
Characteristics, both of the stimulus (e.g., intensity) and the subject (e.g., strategy), may influence the information accumulation process. The presentation will give a short overview of one class of sequential sampling models, i.e., diffusion models and their applications in the behavioral and neurosciences. In particular, I will show how different models account for payoff effects on response bias in perceptual decision tasks.