

Evaluation of Methods for Tracking Strategies in Complex Tasks

Jarrod Moss

Mississippi State University, Mississippi State, Mississippi, United States

Aaron Wong

Mississippi State University, Mississippi State, Mississippi, United States

Kevin Barnes

Mississippi State University, Mississippi State, Mississippi, United States

Jaymes Durriseau

Mississippi State University, Mississippi State, Mississippi, United States

Gary Bradshaw

Mississippi State University, Mississippi State, Mississippi, United States

Abstract

In complex tasks, high performers often have better strategies than low performers even with similar practice. Relatively little research has examined how people form and modify strategies in tasks that permit a large set of possible strategies. One challenge with such research is determining strategies based on behavior. Three algorithms were developed to track the task features people employ in their strategies while performing a complex task. An ACT-R model that performs the task was created to collect simulated data with a range of known strategies. The performance of the three algorithms is compared, and a decision tree classification algorithm yielded the best performance across the test cases. Summary data from applying the algorithms to human data on the tasks is also presented and highlights potential challenges for future work. However, this approach to tracking strategy exploration may enable further development of theories about how people search for good strategies.