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A Self-Supervised and Predictive Processing-Based Model of Event Segmentation and Learning

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Abstract

Event is a fuzzy term that refers to bounded spatio-temporal units. Events guide behavior to allow adaptation to complex environments. The study of event segmentation investigates mechanisms behind the ability to segment the continuous information flow into discrete units. Event Segmentation Theory states that people predict observed ongoing activities and monitor their prediction errors for event segmentation. In this study, inspired by Event Segmentation Theory and predictive processing, we introduced a computational model of event segmentation and learning. In order to verify that our method can segment ongoing activity into meaningful parts and learn them via passive observation, we compared the performance of our method with humans for fine and coarse segmentation tasks in two psychological experiments. The results demonstrated that our model not only learned segmented behavioral units accurately but also displayed similar segmentation performances with human subjects.