عنوان مقاله:

Hierarchical Bayesian Reservoir Memory

محل انتشار:

چهاردهمین کنفرانس بین المللی سالانه انجمن کامپیوتر ایران (سال: 1388)

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خلاصه مقاله:

In a quest for modeling human brain, we are going to introduce a brain model based on a general framework for brain called Memory-Prediction Framework. The model is a hierarchical Bayesian structure that uses Reservoir Computing methods as the state-of-the-art and the most biological plausible Temporal Sequence Processing method for online and unsupervised learning. So, the model is called Hierarchical Bayesian Reservoir Memory (HBRM). HBRM uses a simple stochastic gradient descent learning algorithm to learn and organize common multi-scale spatio-temporal patterns/features of the input signals in a hierarchical structure in an unsupervised manner to provide robust and real-time prediction of future inputs. We suggest HBRM as a real-time high-dimensional stream processing model for the basic brain computations. In this paper we will describe the model and assess its prediction accuracy in a simulated real-world environment.

کلمات کلیدی:

Brian Theory, Bayesian Networks, Memory-Prediction Framework, Stochastic Time-Series Prediction, Reservoir Computing

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