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Brain and artificial intelligence : From the viewpoint of spontaneous and task-evoked brain dynamics (Article)

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Abstract

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Recently, the field of brain science often yields 'big' data and utilizes machine learning, which is central for the present artificial intelligence (AI) field and starts usually from extracting the hidden features. However, the data recorded from the brain are dynamic where the property of the data changes with time, different from photos that are static over the time. Then, the following question emerges: Are brain 's dynamic data really suitable for the present AI techniques? More specifically can we extract exact features from brain 's dynamic data and what kind of dynamics makes this feature extraction more reliable? To answer these questions, in this study, we generated two kinds of the brain dynamics computationally, i.e., spontaneous and task-evoked brain dynamics , and both dynamics were applied to a fundamental technique for most feature extraction methods, that is, the principal component analysis (PCA). We suggest that the task-evoked brain dynamics can give rise to a feature space where different features, possibly related to personality traits, are classified more robustly and may lead to a better brain -AI system.

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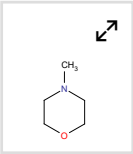

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Artificial Intelligence | Brain | Neural mass model | Principal component analysis | Spon taneous and task-evoked brain dynamics

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