15th International Conference on

Alzheimers Disease & Dementia

conferenceseries.com

September 27, 2021

WEBINAR

J Neurol Disord 2021, Volume 09

Alzheimer's in the context of predictive coding; comprised ability of the brain in making active inference

Keyvan Yahya

Chemnitz University of Technology, Germany

A lthough a large number of computational studies especially in the past decade addressed Alzheimer's Disease (AD) in the context of neural network, artificial intelligence, and so on, relative little work has been devouted to investigating the AD neural underpinnings such as medial temporal and cortical atrophy or its genetic origins using predictive coding. Therefore, here we aim to first, briefly re-define AD in a Bayesian active inference framework, and then to present our findings as to the nature and origins of the disease in terms of surprise, observation, action-selection and generative model.

Inasmuch as AD is considered an impairment of memory recall and online prediction caused by damages to hippocampus, we will demonstrate that according to computational cognitive modeling, the brain of an AD patient is not able to carry out the a few tasks taken together bring about updating generative models and priors. Furthermore, we show the brains of the DA patients are not able to deal with and eventually suppress the element of surprise that is, as suggested by the Bayesian brain theory, a substantial requirement to guarantee making sound inferences about the world. Also, using free energy principle our model illustrates how AD could impair and eventually degenerate the synaptic interactions in the basal temporal cortical and the basal thalamocortical structures and thereby undermining the normal functionality dopamine receptors, striatal neurons, dorsal raphe nucleus (DRN), and acetylcholine. We bring our dicusiion to the end by suggesting the therapeutical implications of our model.