

Computational Approach to the etiology of Alzheimer's disease

Organizers

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Synopsis

Alzheimer's disease is a complex, dynamic disorder, thus computational approach to its etiology based on integrative network models is so significant particularly for diagnosis and prediction of the disease. Recently, computational modeling of Alzheimer's disease has been extensively performed from cellular to systems levels arising from different hypotheses (amyloid beta, tau, and other proteins; hub attack and lethality; synaptic compensation mechanism for disease progression etc). In this workshop, we introduce recent computational studies on the etiology and disease progression of Alzheimer's disease using single cell model and damage model of complex network for the Alzheimer's brain. Firstly, neurobiology of Alzheimer's disease is briefly reviewed and computational approaches (dynamic, statistical, complex network, connection models) are presented, respectively. Computational models for EEG generation are also demonstrated. Finally, the implication of computational models is actively discussed for early diagnosis, and disease progression prediction of Alzheimer's disease. We believe that this workshop is helpful for integrative understanding of Alzheimer's disease.

Potential speakers

1. Michael E Hasselmo Ph.D (Harvard University, Department of Psychology)
2. Carmen Canavier Ph.D (Louisiana State University Health Sciences Center, New Orleans)
3. Lydia S. Glaw or Thomas C. Skalak, Ph.D. (Department of Biomedical Engineering, University of Virginia)

4. Fernando Buarque de L. Neto Ph.D (Department of Computing and Systems - Pernambuco State University (UPE) - Recife - PE – Brazil)
5. Glosser G. Ph.D (University of California, Riverside, USA)
6. Samanwoy Ghosh-Dastidar Ph.D (Center for Biomedical Engineering, The Ohio State University, Columbus, USA)
7. Włodzisław Duch, Ph.D (Computational Intelligence Laboratory, Department of Informatics, Nicolaus Copernicus University, Toruń, Poland)
8. Justin Dauwels, Ph.D (Nanyang Technological University School of Electrical & Electronic Engineering, Singapore)
9. Jaeseung Jeong, Ph.D (KAIST, Department of Bio and Brain Engineering, Daejeon, South Korea)