

Topic:

Complex-Valued Neural Networks.

Organizer:

Akira Hirose (The University of Tokyo)

Link: <http://www.eis.t.u-tokyo.ac.jp/news/IJCNN2009Atlanta/>

Abstract:

The topic is "Complex-Valued Neural Networks (CVNNs)," the networks in the complex domain. The CVNN framework attracts not only many neural network researchers but also signal processing engineers in general, e.g., those in the field of radars, wireless electronics, speech processing, image processing, and robotics, mainly because of its high capability of processing real-world / physics-related information. With the CVNNs, we can deal with phase information (or complex-amplitude information) explicitly in a manner consistent with wave phenomena and rotation mechanisms. The tutorial deals with the basic ideas, theory, fundamental treatment, learning and processing features, origins of merits, and real-world applications. A part of recent progress in this field is found in a series of CVNN Special Sessions in international conferences such as IJCNN 2008 Hong Kong (organizers: A.Hirose, J.M.Zurada, and I.Aizenberg) and IJCNN 2006 Vancouver (A.Hirose), as well as the first Book on the CVNNs to present the basic ideas, techniques, and application technologies comprehensively ("Complex-Valued Neural Networks," Springer, 2006), which has been reviewed in IEEE Transactions on Neural Networks (vol. 19, no.3 (2008) 544).

Intended audience includes researchers for neural applications, in particular, in sensor and imaging engineering, communications, and robotics, as well as those with mathematical interests. Deep and free discussion among the attendees with the speaker will clarify the merits of the CVNNs, with their origins, and possible target applications in the engineering fields in the future. We can expect a new stage of enhancement of engineering aspects in neural networks. Attendees obtain slide copies and handouts. Book discount will also be available for the tutorial attendees by courtesy of Springer. For details, please email to the speaker directly.