Paperwork on Degree Project: Machine Learning Based Fault Prediction for Real-time Scheduling on Shop-floor

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Radial Basis Function Network

Radio basis function network(RBF network), first formulated in a 1988 paper by Broomhead and Lowe, is a class of artificial neural networks that uses radial basis functions as activation functions The output of the network is a linear combination of radial basis functions of the inputs and neuron parameters. Till now, RBF networks are widely used in function approximation, time series prediction, classification, and system control.

Barnali Dey et al. introduced computational intelligence to spectrum sensing in Cognitive Radio by using RBF network as a model and found their model better than conventional ones(Intelligent Automation and Soft Computing)[1]. Hitoshi Nishikawa and Seiichi Ozawa proposed a novel type of RBF network for multitask pattern recognition(Neural Processing Letters)[2]. H. Z. Dai et al. developed an improved RBF network for structural reliability analysis(Journal of Mechanical Science and Technology 25 (9) (2011) 2151 2159)[3]. Mohammad Reza Sabour and Saman Moftakhari Anasori Movahed applied RBF neural network to predict soil sorption partition coefficient(Chemosphere)[4].

Overview

Algorithm Details

Overall, short computation time, medium model complexity. Capable of learning complex patterns. Good generalization ability. Similar to multilayer ANNs.
Step 1:
...
Step n: equations

References

[1] Hassan K Khalil. *Nonlinear systems*. Prentice Hall, Upper Saddle river, 3. edition, 2002. ISBN 0-13-067389-7.

[2] Tobias Oetiker, Hubert Partl, Irene Hyna, and Elisabeth Schlegl. *The Not So Short Introduction to LaTeX 2_ε*. Oetiker, OETIKER+PARTNER AG, Aarweg 15, 4600 Olten, Switzerland, 2008. http://www.ctan.org/info/lshort/.

[3] Shankar Sastry. *Nonlinear systems: analysis, stability, and control*, volume 10. Springer, New York, N.Y., 1999. ISBN 0-387-98513-1.