Identifikasi dan perancangan struktur kendali sistem pressure process rig menggunakan jaringan saraf tiruan radial basis function = Pressure process rig system identification and control design using radial basis function neural network

Annisaa Primadini, author

Abstrak

[ABSTRAK
Jaringan Saraf Tiruan adalah salah satu metode baru yang dikembangkan untuk pemecahan berbagai masalah kompleks yang tidak dapat diselesaikan secara analitik. Salah satu pengembangannya adalah metode jaringan saraf pembelajaran Radial Basis Function, dengan metode inisialisasi bobot Nguyen-Widrow dan Orthogonal Least Square (OLS). Akurasi dan kecepatan pembelajaran yang dimiliki oleh Radial Basis Function (RBF) sangat menarik untuk diaplikasikan pada sistem kendali. Pemodelan Forward dan Invers sistem dilakukan dengan metode RBF dengan mengambil data sistem SISO Pressure Process Rig. Setelah dilakukan pemodelan, jaringan saraf tiruan akan diuji dengan Direct Inverse Test. Hasil identifikasi sistem dan identifikasi invers pada sistem Pressure Process Rig memiliki hasil yang baik. Begitu pula saat diuji coba dengan Direct Inverse Test, sistem kendali mempunyai performa cukup baik, namun tidak menutup kemungkinan adanya skema model lain yang dapat digunakan dalam pemodelan sistem.
<hr>

ABSTRACT
Artificial Neural Network is a newer field of study that could solve any complex problem that could not be done by analytical solution. Radial Basis Function (RBF) is one of the newer method of Artificial Neural Network with two distinct weight initialization method ; Nguyen-Widrow and Orthogonal Least Square (OLS) methods. RBF?s high recognition rate and very fast learning speed are interesting enough to be used in control system. RBF is used in forward and inverse identification in modelling Pressure Process Rig system. Direct Inverse Test is also done in order to make sure Radial Basis Function perform well in identifying a particular system. Radial Basis Function had a great perfomance in both forward and inverse system identification and also in Direct Inverse Test, but it is possible to have another learning scheme in system modelling, Artificial Neural Network is a newer field of study that could solve any complex problem that could not be done by analytical solution. Radial Basis Function (RBF) is one of the newer method of Artificial Neural Network with two distinct weight initialization method ; Nguyen-Widrow and Orthogonal Least Square (OLS) methods. RBF’s high recognition rate and very fast learning speed are interesting enough to be used in control system. RBF is used in forward and inverse identification in modelling Pressure Process Rig system. Direct Inverse Test is also done in order to make sure Radial Basis Function perform well in identifying a particular system. Radial Basis Function had a great perfomance in both forward and inverse system identification and also in Direct Inverse Test, but it is possible to have another learning scheme in system modelling]