

Perbandingan adaptivity pengendali dic menggunakan backpropagation dan radial basis function neural network = Adaptivity comparison of dic controller using backpropagation and radial basis function neural network

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Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20421814&lokasi=lokal>

Abstrak

[ABSTRAK

Perkembangan teknologi yang semakin cepat menjadikan teknologi penting di berbagai sektor kehidupan, khususnya di bidang industri. Perkembangan zaman membuat tingkat permintaan akan suatu produk menjadi berubah sehingga industri harus meningkatkan kinerja produksinya.

Teknologi yang digunakan merupakan teknologi automasi di mana di dalamnya terdapat pengendali. Pengendali yang digunakan oleh kebanyakan industri merupakan pengendali konvensional karena pengendali konvensional relatif murah dan efektif. Akan tetapi pengendali konvensional ini tidak dapat digunakan untuk sistem yang kompleks dan non linear. Pengendali konvensional, misalnya pengendali PID, tidak dapat mengatasi terjadinya perubahan karakteristik dari sistem secara otomatis. Untuk itu diperlukan sistem pengendali yang mampu mengatasi perubahan karakteristik secara otomatis dan dapat beradaptasi dengan dinamika perubahan sistem yang diakibatkan adanya perubahan kondisi lingkungan kerja. Sistem pengendali yang dianggap mampu untuk beradaptasi dengan perubahan karakteristik dari sistem secara otomatis adalah pengendali berbasis Neural Network. Dalam percobaan ini parameter yang digunakan untuk menentukan pengendali yang baik adalah adaptivity serta kecepatan respon pengendali.

Pada hasil simulasi ini didapatkan bahwa pengendali berbasis Neural Network dengan metode Radial Basis Function Neural Network (RBFNN) lebih baik dan lebih cepat dalam menanggapi perubahan karakteristik sistem dibandingkan dengan pengendali Neural Network berbasis backpropagation.

ABSTRACT

Development of technology has been rapidly increasing that make technology as an important aspect in many sectors of life, especially in industrial sector. The times have changed the demand of a product so that industry has to enhance its production capacity.

Technology used in industry is automation technology which has controller inside. Controller used in industry mostly is conventional controller because it has low price and good effectivity. However, conventional controller can't be used for complex and non-linear system. For example, PID controller, it can't handle the changes of system's characteristic automatically. PID controller has to be reset to handle the new system's characteristic. Because of that, industry need a controller that has ability to handle the changes of the system's characteristic automatically and adapt with the dynamics of system's changes caused by external factor. Controller system that has been considered for the ability of handling the changes of system's characteristic automatically is Neural Network based controller. In this experiment, the parameters used to determine good controller is adaptivity of the system also the speed of controller response.

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