基于RBF网络的联合收获机脱粒滚筒恒速控制 Constant Palstance Control of Combine Cylinder Based on RBF

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关键词： 联合收获机 脱粒滚筒 恒速控制 径向基函数网络 在线辨识

摘 要： 对联合收获机行走、收割、脱粒系统进行分析，提出了系统数学模型的基本形式。针对该模型的高阶次、非线性和难以准确获得具体参数等问题，将模型差分方程的基本形式分解为与控制信号无关和有关的2个部分，利用RBF神经网络技术分别对2个部分进行在线辨识，控制器根据辨识结果进行控制，构建了自适应控制。利用该系统进行了不同条件下的仿真和试验，试验证明利用RBF网络可快速有效地拟合被控对象。当对象参数发生变化时，系统可实现跟踪适应，达到较好的控制效果。 The walking office, harvests and threshing system of combine was analyzed, and the fundamental mathematical model of system was proposed. Since this model was high order, nonlinear system, without the accurate system parameter. The difference equation of model was decomposed into two parts. The first part had a bearing on the control signal, another part did not. By using the RBF neural network technology, the two parts was separately identified online. Then, the controller functionated according to the identified result. Under the dissimilar condition, simulation and experiment was carried out which proved that using the RBF network can fit the controlled plant effectively. When the controlled plant parameter changes, the system can track it, achieving the good control effect.

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