基于组合算法的农机装备水平预测分析

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关键词：　农业机械 装备水平 预测分析 滑动窗口 遗传程序设计

摘　要：　农机装备水平预测是一个复杂的非线性系统，为克服传统建模方法在模型选取方面的不足，提出了滑动窗口—遗传程序设计(sliding window—genetic programming，SW—GP)组合算法实现农机装备水平动态预测函数的自动建模。在程序设计时，数据采样采用滑动窗口技术实现，通过改进的GP算法实现系统的自动建模。计算实例结果表明，SW—GP组合算法建立的模型预测值与实际结果具有很好的一致性，预测结果相对误差比传统建模方法明显降低。Forecast of agricultural machinery equipment level is a complicated non-linear system, whose developmental changes have dual treads of continuity and fluctuation. SW—GP (sliding window—genetic programming) algorithm was provided to implement automatic modeling of dynamic forecast function of agricultural machinery equipment level. In the program, sampling data is obtained by sliding window technology and model is founded automatically by GP-improved algorithm, which can overcome the difficulties of model selection in traditional prediction modeling methods. The results of a computation case show that forecasting values from the model agree well with the real values, which explains that employing SW-GP modeling can settle problem for the modeling of complex agricultural machinery equipment level forecast system satisfactorily.

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