

博士论坛

## 一种基于ANN的中医辨证不确定性推理模型研究

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**摘要** 提出中医辨证中不确定性推理的基于可信度因子和可信度区间的模型,并用改进的BP神经网络实现其推理过程,最后利用MATLAB神经网络工具箱给出仿真示例。改进的BP神经网络在实现中医辨证不确定性推理方面有效避免了沿用传统方法所带来的规则数激增及推理缓慢等缺陷,并提高了网络的泛化能力。仿真示例表明,它不仅可以从自动学习和模拟专家的典型经验,而且可以将专家的典型经验推广应用到一般情形。

**关键词** [中医辨证](#) [神经网络](#) [专家系统](#) [不确定性推理](#) [中医](#)

分类号

## An Approach to Uncertain Inference for Syndrome Differentiation in TCM based on Artificial Neural Network

### Abstract

In this paper, a modified Back-Propagation (BP) Artificial Neural Network (ANN) is applied to realizing the uncertainty inference of syndrome differentiation in Traditional Chinese Medicine (TCM), which uses two kinds of knowledge representation methods: certainty factor method and certainty interval method. First, the two methods of uncertainty knowledge representation of syndrome differentiation in TCM are proposed. Second, BP network and its modified train function are presented. Third, how to apply the modified BP network to the uncertainty inference of syndrome differentiation in TCM is illustrated in detail. Finally, two simulative examples using the MATLAB neural toolbox, which include both certainty factor method and certainty interval method for each example, are given and analyzed. The simulation results show that ANN can play a simple, but important and effective role in the uncertainty inference of syndrome differentiation in TCM, and that ANN can not only learn automatically experts' experiences, but also has the capability of generalizing the learned experience into more general situations according with experts' minds.

**Key words** [Syndrome Differentiation](#) [Neural Network](#) [Expert System](#) [Uncertainty Reasoning](#) [Traditional Chinese Medicine \(TCM\)](#)

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