

工程与应用

## 基于规则与ANN的铣削加工参数匹配知识库研究

李爱平, 万高绪, 林献坤

同济大学 现代制造技术研究所, 上海 200092

收稿日期 修回日期 网络版发布日期 2007-12-19 接受日期

**摘要** 分析铣削加工参数匹配关系及其知识表示, 针对产生式规则难以全面、高效表示加工参数定量匹配知识的问题, 提出应用规则推理与人工神经网络(ANN)混合技术构建知识库的方法, 给出了参数定量匹配知识表示的神经网络模型和改进的Vog1知识获取方法, 运用手册上提供的最复杂样本集数据进行实验验证, 结果表明提出的方法具有较好的知识表示性能。最后就如何应用该技术开发面向铣削加工的参数匹配知识库系统展开论述。

**关键词** [加工参数](#) [知识库](#) [知识获取](#) [ANN](#) [规则](#)

分类号

## Application of rule and ANN in establishment of knowledge base for determination of milling parameters

LI Ai-ping, WAN Gao-xu, LIN Xian-kun

Institute of Advanced Manufacturing Technology, Tongji University, Shanghai 200092, China

### Abstract

It is time-consuming to determine appropriate machining parameters in milling process. The paper aims to propose an approach with hybrid technology to establish knowledge base for automation of the determination. Firstly, the relationship among milling parameters is discussed. And then the knowledge contained in these relations is classified into three kinds. As rule based reasoning technology cannot represent the quantitative kind knowledge in an efficient and full-scale way, Artificial Neural Network (ANN) is brought forward to solve the problem in selection of these parameters. A modified Vog1 learning strategy is presented to support the developed ANN model. To demonstrate the performance of the proposed approach, the most complicated patterns from handbook literature are used to train ANN. In the end, some key techniques with the method used to develop a knowledge base system for milling operation are introduced.

**Key words** [machining parameters](#) [knowledge base](#) [knowledge acquisition](#) [Artificial Neural Network](#) [Rule](#)

DOI:

通讯作者 李爱平 [wangaoxu@gmail.com](mailto:wangaoxu@gmail.com)

### 扩展功能

#### 本文信息

▶ [Supporting info](#)

▶ [PDF\(811KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

#### 服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

#### 相关信息

▶ [本刊中 包含“加工参数”的相关文章](#)

▶ [本文作者相关文章](#)

· [李爱平](#)

· [万高绪](#)

· [林献坤](#)