论文

列车运行控制系统设计正确性的验证方法

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摘要：

为验证系统开发阶段列车运行控制系统设计的正确性,提出了基于RAISE 软件的系统建模、描述及验证方法. 以CTCS-3 级两列列车追踪运行为例,采用面向系统特性的域,建立了系统域模型,并在对域模型扩充和完善的基础上,用RSL 语言描述了两列列车追踪运行情况. 根据RSL 语言描述的公理及RAISE 自身的推理规则,验证了当两列列车追踪运行时, CTCS-3 级列车运行控制系统设计的正确性.

关键词： 交通信息工程　形式化方法　列车运行控制系统　安全苛求系统

Method for Verifying the Correctness of Train Control System Design

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Abstract:

To verify the correctness of a train control system design in the development stage, a formal method, which is based on RAISE (rigorous approach to industrial software engineering) and can be used for system modeling, description and verification, was proposed. For the tracking operation between two trains of CTCS-3 (China train control system level 3), domain models of the system were established by adopting feature-oriented domains. After extending and improving the domain models using RAISE specification language (RSL), a final description of the tracking operation between two trains was formed. With the axioms described by RSL and reasoning rules of RAISE, the system design of CTCS-3 was verified correct in the context of tracking scene between two trains.

Keywords: traffic information engineering　formal method　train control system　safe critical system

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参考文献：

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1. 何宾 .形式化方法在CAD软件开发中的应用关 [J]. 西南交通大学学报, 1999,34(6): 693-697

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