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(54) Title: METHOD FOR CALCULATING LENGTH OF TIME TAKEN FOR TRAIN TO PASS THROUGH TUNNEL, SYSTEM, AND STORAGE MEDIUM

(54) 发明名称: 列车过隧道时长计算方法、系统及存储介质

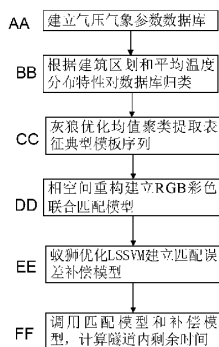


图 1

AA Establish a pressure and weather parameter database
BB Perform classification of the database by means of building zone partitioning and an average temperature distribution characteristic
CC Extract a characteristic typical template sequence by means of grey wolf optimization on average value clusters
DD Establish an RGB color joint matching model by means of phase space reconstruction
EE Establish a matching error compensation model by means of antlion optimization and an LSSVM
FF Calculate a remaining time in a tunnel by calling the matching model and the compensation model

(57) Abstract: Disclosed are a method for calculating the length of time taken for a train to pass through a tunnel, a system, and a storage medium. The method comprises: acquiring, by means of on-board temperature, humidity, and pressure sensors installed at a head and tail end of a train, a pressure and weather parameter sequence while the training is passing through a tunnel, acquiring, by means of a pre-installed transponder device, a mileage sequence of a current position to a tunnel exit, and constructing a tunnel weather parameter database; classifying tunnel pressure and weather parameters in the database by means of building zone partitioning and an average temperature distribution model; on such basis, performing typical sequence extraction with respect to each class, and constructing an RGB color image joint template matching model; establishing an LSSVM error model for output errors of the RGB color image joint template matching model; and fusing the two models in an organic manner, thereby realizing accurate calculation of the length of time taken for a train to pass through a tunnel.

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本国际公布:

— 包括国际检索报告(条约第21条(3))。

(57) 摘要: 本发明公开了一种列车过隧道时长计算方法、系统及存储介质, 通过安装在列车头尾两端的车载温度、湿度和气压传感器获取列车通过隧道时的气压气象参数序列, 通过事先安装的应答式装置获取当前位置距离隧道出口的里程序列, 构建隧道气象参数数据库。通过建筑区划和平均温度分布模型实现数据库内隧道气压气象参数分类。在此基础上对每个类别进行典型序列提取, 构建RGB彩色图像联合模板匹配模型。并对RGB彩色图像联合模板匹配模型输出误差建立LSSVM误差模型。最后将两种模型有机融合, 实现列车通过隧道时长的精确计算。