

Abstract

System and method for improving safety of a guided vehicle moving on a railway network

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The invention relates to a system (100) and a method (400) for modeling a gradient of a track (111) of a railway network (110), said method (400) comprising:

- splitting (401) the railway network track (111) in N portions $P_1, P_2, \dots, P_N$ of track, wherein each portion P_k of track starts at a position p_k and ends at a position p'_k that is located within a directly next portion of track P_l ;
- calculating (402) for each P_k , an average gradient value $AG_{1,k}$ obtained from gradient values of a first source S_1 , and an average gradient value $AG_{2,k}$ obtained from gradient values of a second source S_2 ;
- for each P_k , comparing (404) $AG_{1,k}$ to $AG_{2,k}$, and if a difference between their values is smaller than a predefined reference value, then assigning to a sub-portion of said track the value of $AG_{1,k}$ or of $AG_{2,k}$ or a mean value obtained from $AG_{1,k}$ and $AG_{2,k}$; otherwise if said difference is greater than said predefined reference value, then using a third source S_3 of gradient values for calculating for P_k an average gradient value $AG_{3,k}$, and comparing the latter to at least one of the values $AG_{1,k}$ and $AG_{2,k}$ in order to determine if their difference is smaller than said predefined reference value, and, in the affirmative, assigning to said sub-portion of track a gradient value that is the average gradient value of said at least one of the values $AG_{1,k}$ and $AG_{2,k}$, or the value of $AG_{3,k}$, or a mean value obtained from their combination; in the negative, comparing $AG_{3,k}$ to the other one of the values $AG_{1,k}$ and $AG_{2,k}$ in order to determine if their difference is smaller than said predefined reference value, and, in the affirmative, assigning to said sub-portion a gradient value that is the average gradient value of said other one of the values $AG_{1,k}$ and $AG_{2,k}$, or $AG_{3,k}$, or a mean value obtained from their combination; and if both the difference between $AG_{3,k}$ and $AG_{1,k}$ and the difference between $AG_{3,k}$ and $AG_{2,k}$ are greater than said predefined reference value, then generating an alert and/or using a restrictive gradient value for said sub-portion.

Figure 1