CLAIMS

1. A railway track identification device comprising:

an image acquisition unit configured to acquire a captured image acquired by capturing an image of a region lying in a traveling direction of a railway vehicle;

a railway track detection unit configured to detect, for each of a plurality of groups of pixels in the captured image, a railway track on a basis of a feature amount, the feature being based on a predetermined standard and being possible to be a criterion representing similarity to a railway track;

a branch track detection unit configured to detect whether there is a branch track branching off from the railway track being detected; and

a railway track detection result output unit configured to output a result of detection by the railway track detection unit and a result of detection by the branch track detection unit, wherein

the branch track detection unit acquires, as a branch position of the branch track, an intersection between the branch track and the railway track detected by the railway track detection unit, and sets a fan-shaped search region to detect the branch track by using the branch position as a pivot.

~~2. The railway track identification device according to claim 1, wherein the branch track detection unit acquires, as a branch position of the branch track, an intersection between the branch track and the railway track detected by the railway track detection unit.~~

2~~3~~. The railway track identification device according to claim 1~~2~~, wherein the branch track detection unit repeatedly executes branch track detection processing of detecting the branch track, the branch track detection processing being executed on all the branch positions detected on the railway track detected by the railway track detection unit.

~~4. The railway track identification device according to claim 2 or 3, wherein the branch track detection unit sets a fan-shaped search region and detects the branch track by using the branch position as a pivot.~~

3~~5~~. The railway track identification device according to ~~any one of~~ claim~~s~~ 1~~2~~ or~~to~~ 2~~4~~, wherein the branch track detection unit acquires, as the branch track, a line segment intersecting the railway track detected by the railway track detection unit.

4~~6~~. The railway track identification device according to claim 3~~5~~, wherein the branch track detection unit sets a fan-shaped search region for the branch track, the fan-shaped search region starting at the branch position being detected, the fan-shaped search region being set at an angle covering a range of a maximum curvature that the branch track is able to take on a basis of the line segment.

5~~7~~. The railway track identification device according to any one of claims 1 to 4~~6~~, wherein the branch track detection unit detects the branch track on a basis of a degree of similarity to the railway track detected by the railway track detection unit.

6~~8~~. The railway track identification device according to any one of claims 1 to 5~~7~~, further comprising a branch information acquisition unit configured to acquire branch information including at least one of: presence or absence of the branch track included in a region corresponding to an imaging region of the captured image acquired at a present position of the railway vehicle; a number of the branch tracks; and a branch destination to which the railway vehicle travels,

wherein the branch track detection unit identifies, on a basis of the branch information, the branch track on which the railway vehicle travels.

7~~9~~. The railway track identification device according to claim 6~~8~~, wherein the branch track detection unit sets a search region for the branch track, on a basis of branch information acquired by the branch information acquisition unit.