CLAIMS

1.- A method for computing a path between a starting point (A) and an end point (B) on a map representative of a terrain, said map being shown in the form of a digital image made up of a matrix of elementary units, each elementary unit having an associated crossing cost value, characterized in that it includes the following steps:

- dividing (42) said digital image into blocks of varying sizes according to a breakdown criterion depending on the crossing cost values of the elementary units belonging to one said block,

- associating (42) a crossing cost value with each block,

- obtaining (48) a path between the starting point and the end point, made up of at least two linear segments (S), optimizing an overall crossing cost equal to a sum of the local crossing costs, each linear segment (S) having an associated local crossing cost ($C_{local}(S)$), wherein one linear segment (S) connects a first point of a first block (Bc) and a second point of a second block (Bv) adjacent to the first block (Bc), the second point of the second block (Bv) being selected according to a distance criterion relative to the first point of the first block (Bc).

2.- The method according to claim 1, characterized in that the second point of the second block (Bv) is the point of the second block (Bv) closest to the first point of the first block (Bc) according to a predetermined distance.

3.- The method according to any one of claims 1 or 2, wherein the local crossing cost ($C_{local}(S)$) associated with a linear segment (S) is a function of the length of said linear segment and the crossing cost value associated with the first block (Bc).

4.- The method according to any one of the preceding claims, characterized in that it includes, before the step (48) for obtaining a path, a step (44) for extracting a graph showing, for each block (Bc) of the division, a set of blocks (Bv) adjacent to said block of the division according to a predetermined neighborhood.

5.- The method according to any one of the preceding claims, characterized in that it also includes, after the step (48) for obtaining a path, a step (50) for refining the obtained path to obtain a refined path, including the following sub-steps:

- selecting elementary units that are part of the blocks of varying size crossed by the obtained path,

- computing a refined path between the starting point and the end point, optimizing an overall crossing cost, said refined path being made up of refined linear segments, one refined linear segment connecting a first point of a first elementary unit and a second point of a second elementary unit adjacent to said first elementary unit, among said selected elementary units.

6.- The method according to any one of the preceding claims, characterized in that it includes, before the step (42) for dividing into blocks of varying sizes, a step (40) for simplifying said digital image representative of said map consisting of associating each elementary unit with a category from a predetermined set of categories, according to the crossing cost value associated with said elementary unit.

7.- The method according to claim 6, characterized in that said simplification step implements computing a histogram of said digital image, and partitioning the histogram into a predetermined number of categories.

8.- The method according to one of claims 6 or 7, characterized in that said step (42) for dividing into blocks of varying sizes consists of recursively dividing each block of said digital image, starting from a block equal to the digital image, into four blocks of equal size, until a stop-division criterion has been verified.

9.- The method according to claim 8, characterized in that said recursive division is stopped for a given block when an entropy value is below a predetermined threshold value, said entropy value being computed as a function of categories associated with the elementary units making up said given block.

10.- The method according to any one of claims 6 to 9, characterized in that the association of a crossing cost value with each block obtained by dividing into blocks of varying sizes comprises, for a given block, determining the majority category of the elementary units making up said given block, and the association with said given block of a mean crossing cost value computed for said majority category.

CLAIMS

1.- A method for computing a path between a starting point (A) and an end point (B) on a map representative of a terrain, said map being shown in the form of a digital image made up of a matrix of elementary units, each elementary unit having an associated crossing cost value, characterized in that said crossing cost value is non-binary and in that the method includes the following steps:

- dividing (42) said digital image into blocks of varying sizes according to a breakdown criterion depending on the crossing cost values of the elementary units belonging to one said block,

- associating (42) a crossing cost value with each block,

- obtaining (48) a path between the starting point and the end point, made up of at least two linear segments (S), optimizing an overall crossing cost equal to a sum of the local crossing costs, each linear segment (S) having an associated local crossing cost ($C_{local}(S)$), wherein one linear segment (S) connects a first point of a first block (Bc) and a second point of a second block (Bv) adjacent to the first block (Bc), the second point of the second block (Bv) being selected according to a distance criterion relative to the first point of the first block (Bc).

2.- The method according to claim 1, characterized in that the second point of the second block (Bv) is the point of the second block (Bv) closest to the first point of the first block (Bc) according to a predetermined distance.

3.- The method according to any one of claims 1 or 2, wherein the local crossing cost ($C_{local}(S)$) associated with a linear segment (S) is a function of the length of said linear segment and the crossing cost value associated with the first block (Bc).

4.- The method according to any one of the preceding claims, characterized in that it includes, before the step (48) for obtaining a path, a step (44) for extracting a graph showing, for each block (Bc) of the division, a set of blocks (Bv) adjacent to said block of the division according to a predetermined neighborhood.

5.- The method according to any one of the preceding claims, characterized in that it also includes, after the step (48) for obtaining a path, a step (50) for refining the obtained path to obtain a refined path, including the following sub-steps:

- selecting elementary units that are part of the blocks of varying size crossed by the obtained path,

- computing a refined path between the starting point and the end point, optimizing an overall crossing cost, said refined path being made up of refined linear segments, one refined linear segment connecting a first point of a first elementary unit and a second point of a second elementary unit adjacent to said first elementary unit, among said selected elementary units.

6.- The method according to any one of the preceding claims, characterized in that it includes, before the step (42) for dividing into blocks of varying sizes, a step (40) for simplifying said digital image representative of said map consisting of associating each elementary unit with a category from a predetermined set of categories, according to the crossing cost value associated with said elementary unit.

7.- The method according to claim 6, characterized in that said simplification step implements computing a histogram of said digital image, and partitioning the histogram into a predetermined number of categories.

8.- The method according to one of claims 6 or 7, characterized in that said step (42) for dividing into blocks of varying sizes consists of recursively dividing each block of said digital image, starting from a block equal to the digital image, into four blocks of equal size, until a stop-division criterion has been verified.

9.- The method according to claim 8, characterized in that said recursive division is stopped for a given block when an entropy value is below a predetermined threshold value, said entropy value being computed as a function of categories associated with the elementary units making up said given block.

10.- The method according to any one of claims 6 to 9, characterized in that the association of a crossing cost value with each block obtained by dividing into blocks of varying sizes comprises, for a given block, determining the majority category of the elementary units making up said given block, and the association with said given block of a mean crossing cost value computed for said majority category.