Claims

[Claim 1]

A position error prediction device for predicting a probability distribution of a magnitude of an error in position information where a moving body is considered to be present, the position error prediction device comprising a prediction unit predicting a probability distribution of a magnitude of the error at a prediction target point based on a prediction model indicating a relationship between terrain feature data indicating a terrain feature at a certain point and a probability distribution of a magnitude of the error at the point and the terrain feature data at the prediction target point,

wherein the terrain feature data includes a value related to ease of reception of a signal from a satellite of a satellite positioning system, and possessed by a space over the point for each elevation angle from a ground.

[Claim 2]

The position error prediction device according to claim 1,

wherein the value related to ease of reception is a value indicating a magnitude of a space where there is no

blockage in relation to the satellite of the satellite positioning system for each elevation angle from a ground at the point over the point.

[Claim 3]

The position error prediction device according to claim 1 or 2,

wherein the value related to ease of reception is a value indicating the number of boundaries between a space where there is no blockage and a space where there is blockage in relation to the satellite of the satellite positioning system for each elevation angle from a ground at the point over the point.

[Claim 4]

The position error prediction device according to any one of claims 1 to 3,

wherein the terrain feature data further includes a predetermined feature quantity based on a shape of a travel path of a moving body passing through the point and an orientation of the moving body.

[Claim 5]

The position error prediction device according to any one of claims 1 to 4, further comprising a learning

unit creating the prediction model by learning a relationship between the terrain feature data and the probability distribution calculated based on the magnitudes of a plurality of the errors measured at a point having the terrain feature data.

[Claim 6]

The position error prediction device according to claim 5,

wherein the learning unit classifies the probability distribution into groups of similarities, selects the probability distribution from each of the groups such that a ratio of the number of the probability distributions selected from the respective groups is a ratio in a predetermined range that can be regarded as equal, and creates the prediction model based on the selected probability distribution and the terrain feature data corresponding to the probability distribution.

[Claim 7]

A model creation device comprising:

a data acquisition unit acquiring terrain feature data indicating a terrain feature at a certain point and a plurality of pieces of information indicating a magnitude of an error in position information positioned by a

satellite positioning system and acquired from the satellite positioning system at the point;

a learning data creation unit calculating a probability distribution of the magnitude of the error based on the plurality of pieces of information indicating the magnitude of the error; and

a prediction model creation unit creating a prediction model indicating a relationship between the terrain feature data and the probability distribution of the magnitude of the error based on the terrain feature data and the probability distribution of the magnitude of the error,

wherein the terrain feature data includes a value related to ease of reception of a signal from a satellite of a satellite positioning system, and possessed by a space over the point for each elevation angle from a ground.

[Claim 8]

A position error prediction method for predicting a probability distribution of a magnitude of an error in position information where a moving body is considered to be present, the position error prediction method comprising:

predicting a probability distribution of a magnitude of the error at a prediction target point based on a prediction model indicating a relationship between terrain feature data indicating a terrain feature at a certain point and a probability distribution of a magnitude of the error at the point and the terrain feature data at the prediction target point,

wherein the terrain feature data includes a value related to ease of reception of a signal from a satellite of a satellite positioning system, and possessed by a space over the point for each elevation angle from a ground.

[Claim 9]

A model creation method comprising:

acquiring terrain feature data indicating a terrain feature at a certain point and a plurality of pieces of information indicating a magnitude of an error in position information positioned by a satellite positioning system and acquired from the satellite positioning system at the point;

calculating a probability distribution of the magnitude of the error based on the plurality of pieces of information indicating the magnitude of the error; and

creating a prediction model indicating a relationship between the terrain feature data and the probability distribution of the magnitude of the error based on the terrain feature data and the probability distribution of the magnitude of the error,

wherein the terrain feature data includes a value related to ease of reception of a signal from a satellite of a satellite positioning system, and possessed by a space over the point for each elevation angle from a ground.

[Claim 10]

A program for causing a computer to execute a position error prediction process for predicting a probability distribution of a magnitude of an error in position information where a moving body is considered to be present, the process comprising predicting a probability distribution of a magnitude of the error at a prediction target point based on a prediction model indicating a relationship between terrain feature data indicating a terrain feature at a certain point and a probability distribution of a magnitude of the error at the point and the terrain feature data at the prediction target point,

wherein the terrain feature data includes a value related to ease of reception of a signal from a satellite of a satellite positioning system, and possessed by a space over the point for each elevation angle from a ground.

[Claim 11]

A program for causing a computer to execute a process comprising:

acquiring terrain feature data indicating a terrain feature at a certain point and a plurality of pieces of information indicating a magnitude of an error in position information positioned by a satellite positioning system and acquired from the satellite positioning system at the point;

calculating a probability distribution of the magnitude of the error based on the plurality of pieces of information indicating the magnitude of the error; and

creating a prediction model indicating a relationship between the terrain feature data and the probability distribution of the magnitude of the error based on the terrain feature data and the probability distribution of the magnitude of the error,

wherein the terrain feature data includes a value related to ease of reception of a signal from a satellite

of a satellite positioning system, and possessed by a space over the point for each elevation angle from a ground.