CLAIMS

1. A wireless communication device capable of changing a communication parameter to be used according to a surrounding situation, comprising:

a learning database that stores, in association with each other, a surrounding situation of a first wireless communication device, a predetermined communication parameter, and a communication performance in communication in a case where the communication is performed between the first communication device and a second communication device by using the predetermined communication parameter;

a plurality of sensors;

surrounding situation determination unit configured to determine a surrounding situation of a host device from information obtained from the plurality of sensors;

communication parameter determination unit configured to refer to the learning database to determine the communication parameter that is appropriate in the surrounding situation of the host device; and

wireless communication unit configured to perform communication by using the communication parameter determined by the communication parameter determination unit~~.~~,

wherein the communication parameter determination unit refers to the learning databased to determine candidates for the communication parameter that are appropriate in the surrounding

situation of the host device, and determines the communication parameter for use in communication from among the candidates based on a requirement of the communication.

~~2. The wireless communication device according to claim 1, wherein~~

~~the communication parameter determination unit refers to the learning database to determine candidates for the communication parameter that are appropriate in the surrounding situation of the host device, and determines the communication parameter for use in communication from among the candidates based on a requirement of the communication.~~

~~3~~ 2. The wireless communication device according to claim 1 ~~or 2~~, wherein

the communication parameter ~~candidate~~ determination unit determines the candidates for one or a plurality of the communication parameters for each of a transport layer, a network layer, a data link layer, and a physical layer.

~~4~~ 3. The wireless communication device according to ~~any one of~~ claim~~s~~ 1 ~~to~~ or 3, wherein

the wireless communication device is mounted on a vehicle.

~~5~~ 4. The wireless communication device according to claim ~~4~~ 3, wherein

the information obtained from the plurality of sensors includes at least any of a location of the vehicle, a speed of the vehicle, an acceleration of the vehicle, and the number of surrounding vehicles.

~~6~~ 5. The wireless communication device according to any one of claims 1 to ~~5~~ 4, further comprising:

historical information storage unit configured to store, in association with each other, the communication parameter and the communication performance of the communication performed by the wireless communication unit and the current surrounding situation of the host device as historical information;

historical information transmission unit configured to transmit the historical information stored in the historical information storage unit to a server device; and

historical information communication unit configured to receive the historical information accumulated in the server device.

~~7~~ 6. The wireless communication device according to claim 1, further comprising:

communication partner surrounding situation acquisition unit configured to acquire a surrounding situation from a wireless communication device of a communication partner, wherein

the learning database further stores a surrounding situation of the second wireless communication device in association with

the communication performance in the communication, and

the communication parameter determination unit refers to the learning database to determine the communication parameter that is appropriate in the surrounding situations of the host device and the communication partner.

~~8~~ 7. The wireless communication device according to claim ~~7~~ 6, wherein

the communication parameter determination unit refers to the learning database to determine candidates for the communication parameter that are appropriate in the surrounding situations of the host device and the communication partner, and determines the communication parameter used in communication from among the candidates based on a requirement of the communication.

~~9~~ 8. The wireless communication device according to claim ~~7~~ 6 or ~~8~~ 7, wherein

the communication parameter ~~candidate~~ determination unit determines the candidates for one or a plurality of the communication parameters for each of a transport layer, a network layer, a data link layer, and a physical layer.

~~10~~ 9. The wireless communication device according to any one of claims ~~7~~ 6 to ~~9~~ 8, wherein

the wireless communication device is mounted on a vehicle.

~~11~~ 10. The wireless communication device according to claim ~~10~~ 9, wherein

the information obtained from the plurality of sensors includes at least any of a location of the vehicle, a speed of the vehicle, an acceleration of the vehicle, and the number of surrounding vehicles.

~~12~~ 11. The wireless communication device according to any one of claims ~~7~~ 6 to ~~11~~ 10, further comprising:

historical information storage unit configured to store, in association with each other, the communication parameter and the communication performance of the communication performed by the wireless communication unit and the current surrounding situations of the host device and the communication partner as historical information;

historical information transmission unit configured to transmit the historical information stored in the historical information storage unit to a server device; and

historical information communication unit configured to receive the historical information accumulated in the server device.

~~13~~ 12. A wireless communication method capable of changing a communication parameter to be used according to a surrounding situation, comprising:

a surrounding situation determination step of determining a

surrounding situation of a host device from information obtained from a plurality of sensors;

a communication parameter determination step of referring to a learning database that stores, in association with each other, a surrounding situation of a first wireless communication device, a predetermined communication parameter, and a communication performance in communication in a case where the communication is performed between the first communication device and a second communication device by using the predetermined communication parameter to determine the communication parameter that is appropriate in the surrounding situation of the host device; and

a wireless communication step of performing communication by using the communication parameter determined in the communication parameter determination step~~.~~,

wherein the communication parameter determination step includes referring to the learning database to determine candidates for the communication parameter that are appropriate in the surrounding situation of the host device, and determining the communication parameter for use in communication from among the candidates based on a requirement of the communication.

~~14~~ 13. The wireless communication method according to claim ~~13~~ 12, further comprising:

a communication partner surrounding situation acquisition step of acquiring a surrounding situation from a wireless communication device of a communication partner, wherein

a surrounding situation of the second wireless communication device is further stored in the learning database in association with the communication performance in the communication, and

the communication parameter that is appropriate in the surrounding situations of the host device and the communication partner is determined by referring to the learning database in the communication parameter determination step.