What is claimed is:

1. A polishing apparatus that is capable of referring to a storage in which a machine learning model is stored, the machine learning model being learned using learning data in which a feature amount of a signal regarding a frictional force between a polishing member and a substrate in polishing or a feature amount of a temperature of the polishing member or the substrate in polishing is input, and data regarding a film thickness of the polished substrate or a parameter related to yield of a product included in the polished substrate is output, the device comprising:

a polishing table provided with the polishing member and configured to be rotatable;

a polishing head facing the polishing table and configured to be rotatable, wherein the substrate is attachable to a surface facing the polishing table;

a control unit configured to perform control to polish the substrate by pressing the substrate against the polishing member while rotating the polishing table and the polishing head having the substrate attached thereto;

a processor configured to generate the feature amount from the signal regarding the frictional force between the polishing member and the substrate in polishing or the feature amount from the temperature of the polishing member or a target substrate in polishing, and output the data regarding the film thickness of the polished substrate or

any of the parameters related to the yield of the product included in the polished substrate, as an estimated value, by inputting the generated feature amount to the learned machine learning model; and

a film thickness measuring device configured to measure the film thickness of the substrate, wherein

the processor

controls the film thickness measuring device to measure a film thickness of the polished target substrate when the output estimated value satisfies a predetermined polishing deterioration condition, and

controls the film thickness measuring device not to measure the film thickness of the polished target substrate when the output estimated value does not satisfy the predetermined polishing deterioration condition.

2. The polishing apparatus according to claim 1, wherein

the processor stops processing for a subsequent substrate when the output estimated value satisfies a predetermined polishing deterioration condition.

3. The polishing apparatus according to any one of claim 1 to 2, wherein

the processor outputs a maintenance timing by using a tendency of the estimated value output for the polished substrate at a plurality of different times.

4. The polishing apparatus according to any one of claim 1 to 3, wherein

the processor performs control to issue a warning for

urging a maintenance, when the output estimated value satisfies a predetermined polishing deterioration condition.

5. The polishing apparatus according to any one of claim 1 to 4, wherein

the processor adjusts a polishing condition for a subsequent substrate in accordance with the output estimated value so that data regarding a desired film thickness of a polished substrate or a parameter related to desired yield of a product included in the polished substrate is obtained.

6. The polishing apparatus according to any one of claim 1 to 5, wherein

the processor learns the machine learning model again using the feature amount during an operation of the polishing apparatus.

7. An information processing system that is capable of referring to a storage in which a machine learning model is stored, the machine learning model being learned using learning data in which a feature amount of a signal regarding a frictional force between a polishing member and a substrate in polishing or a feature amount of a temperature of the polishing member or the substrate in polishing is input, and data regarding a film thickness of the polished substrate or a parameter related to yield of a product included in the polished substrate is output, the system comprising:

a generation unit configured to generate the feature amount from the signal regarding the frictional force between the polishing member and the substrate in polishing or the feature amount from the temperature of the polishing member or a target substrate in polishing;

an estimation unit configured to output the data regarding the film thickness of the polished substrate or any of the parameters related to the yield of the product included in the polished substrate, as an estimated value, by inputting the generated feature amount to the learned machine learning model; and

a control unit configured to control the film thickness measuring device to measure a film thickness of the polished target substrate when the output estimated value satisfies a predetermined polishing deterioration condition, and control the film thickness measuring device not to measure the film thickness of the polished target substrate when the output estimated value does not satisfy the predetermined polishing deterioration condition.

8. A polishing method for polishing a substrate by a polishing apparatus that is capable of referring to a storage in which a machine learning model is stored, the machine learning model being learned using learning data in which a feature amount of a signal regarding a frictional force between a polishing member and a substrate in polishing or a feature amount of a temperature of the polishing member or the substrate in polishing is input,

and data regarding a film thickness of the polished substrate or a parameter related to yield of a product included in the polished substrate is output, the method comprising:

polishing the substrate by pressing the substrate against the polishing member while rotating the polishing table and the polishing head having the substrate attached thereto;

generating the feature amount by measuring the signal regarding the frictional force between the polishing member and the substrate in polishing or the temperature of the polishing member or a target substrate in polishing;

inputting the generated feature amount to the learned machine learning model;

outputting the data regarding the film thickness of the polished substrate or any of the parameters related to the yield of the product included in the polished substrate, as an estimated value; and

determining whether or not the output estimated value satisfies a predetermined polishing deterioration condition; and causing a film thickness measuring device to measure a film thickness of the polished target substrate when the output estimated value satisfies the predetermined polishing deterioration condition, and not to measure the film thickness of the polished target substrate when the output estimated value does not satisfy the predetermined polishing deterioration condition.

9. The polishing method according to claim 8, further comprising:

determining whether or not the output estimated value satisfies a predetermined polishing deterioration condition; and stopping processing for a subsequent substrate when the output estimated value satisfies the predetermined polishing deterioration condition.

10. The polishing method according to any one of claim 8 to 9, further comprising outputting a maintenance timing by using a tendency of the estimated value output for the polished substrate at a plurality of different times.

11. The polishing method according to any one of claim 8 to 10, further comprising:

determining whether or not the output estimated value satisfies a predetermined polishing deterioration condition; and issuing a warning for urging a maintenance when the output estimated value satisfies the predetermined polishing deterioration condition.

12. The polishing method according to any one of claim 8 to 11, further comprising adjusting a polishing condition for a subsequent substrate in accordance with the output estimated value so that data regarding a desired film thickness of a polished substrate or a parameter related to desired yield of a product included in the polished substrate is obtained.

13. The polishing method according to any one of claim 8 to 12, further comprising learning the machine learning

model again using the feature amount during an operation of the polishing apparatus.

14. A computer-readable storage medium storing a program causing a computer that is capable of referring to a storage in which a machine learning model is stored, the machine learning model being learned using learning data in which a feature amount of a signal regarding a frictional force between a polishing member and a substrate in polishing or a feature amount of a temperature of the polishing member or the substrate in polishing is input, and data regarding a film thickness of the polished substrate or a parameter related to yield of a product included in the polished substrate is output, to function as:

a generation unit configured to generate the feature amount from the signal regarding the frictional force between the polishing member and the substrate in polishing or the feature amount from the temperature of the polishing member or a target substrate in polishing;

an estimation unit configured to output the data regarding the film thickness of the polished substrate or any of the parameters related to the yield of the product included in the polished substrate, as an estimated value, by inputting the generated feature amount to the learned machine learning model; and

a control unit configured to configured to control the film thickness measuring device to measure a film

thickness of the polished target substrate when the output estimated value satisfies a predetermined polishing deterioration condition, and control the film thickness measuring device not to measure the film thickness of the polished target substrate when the output estimated value does not satisfy the predetermined polishing deterioration condition.