CLAIMS

1. A substrate processing apparatus comprising:

at least one sensor that detects a physical quantity of an object during polishing and/or during cleaning and/or during drying of a substrate;

a conversion section that converts a sensor value during polishing and/or during cleaning and/or during drying detected by the sensor into a feature amount for each processing step with respect to a trained machine learning model; and

an inference section that outputs at least one predicted value of a number of defects, a size of a defect, and a position of a defect in a target substrate by inputting target data including the feature amount to the trained machine learning model, wherein

the trained machine learning model is trained using a learning data set whose input data includes a feature amount obtained by converting a sensor value during polishing and/or during cleaning detected by the sensor in a target production line or a production line of an identical type with the target production line for each processing step, and whose output data is at least one of a number of defects, a size of a defect, and a position of a defect in the substrate.

2. The substrate processing apparatus according to claim

1, wherein

the input data at a time of training of the machine learning model further includes a stay time of staying in a unit counted for each unit included in the substrate processing apparatus,

the substrate processing apparatus further comprises a unit stay time counting section that counts a stay time in the unit for each unit included in the substrate processing apparatus, and

the target data input to the trained machine learning model further includes the stay time in the unit counted for each unit by the unit stay time counting section.

3. The substrate processing apparatus according to claim 1 [[or 2]], wherein

the input data at a time of training of the machine learning model further includes a second feature amount obtained by converting a position of a member used for polishing or cleaning,

the conversion section converts the position of the member used for polishing or cleaning into the second feature amount, and

the target data input to the trained machine learning model further includes the second feature amount for each member converted by the conversion section.

4. The substrate processing apparatus according to claim

1, wherein

the input data at a time of training of the machine learning model further includes recipe information including a command value for a unit included in the substrate processing apparatus, and

the target data input to the trained machine learning model further includes recipe information including a command value for a unit included in the substrate processing apparatus.

5. The substrate processing apparatus according to claim 1, further comprising:

a regression analysis section that outputs a correlation parameter representing a correlation with one of a number of defects, a size of a defect, and a position of a defect in the substrate for each of a plurality of sensor values according to a predetermined regression analysis algorithm;

a reception section that receives at least one sensor that outputs a sensor value that is a basis of the feature amount included in the input data of the machine learning model; and

a learning section that trains the machine learning model again with the feature amount obtained by converting the sensor value of the received sensor, wherein

the inference section outputs the predicted value using

the machine learning model trained again by the learning section.

6. An information processing system comprising:

a conversion section that converts a sensor value during polishing and/or during cleaning and/or during drying of a substrate detected by a sensor included in a substrate processing apparatus into a feature amount for each processing step with respect to a trained machine learning model; and

an inference section that outputs at least one predicted value of a number of defects in the substrate, a size of a defect, and a position of a defect in the substrate by inputting target data including the feature amount, wherein

the trained machine learning model is trained using a learning data set whose input data includes a feature amount obtained by converting a sensor value during polishing and/or during cleaning detected by the sensor in a target production line or a production line of an identical type with the target production line for each processing step, and whose output data is at least one of a number of defects, a size of a defect, and a position of a defect in the substrate.