includes an information acquisition processing (information acquisition process) of acquiring the stress information, and an inference processing (inference process) of inferring the polishing quality information indicating the polishing quality of the substrate to which the stress indicated by the stress information is applied when acquiring the stress information in the information acquisition processing.

[0143] The form of the inference apparatus (inference method or inference program) can be applied to various devices more easily than when the information processing device is implemented. It is readily understood by a person skilled in the art that the state prediction section may be applied with use of the learning model as the learned model created by the machine-learning device and the machine-learning method according to the above-described embodiments when the inference apparatus (inference method or inference program) infers the substrate slip-out information.

Industrial Applicability

[0144] The present invention is applicable to an information processing apparatus, an inference apparatus, a machine-learning device, an information processing method, an inference method, and a machine-learning method.

Reference Signs List

[0145] 1...substrate processing system, 2...substrate processing device, 3...database device, 4, 4a...machine-learning device, 5, 5a...information processing device,
6...user terminal device, 7...network,
10...learning model, 10A...first learning model, 10B...second learning model,
11A...first learning data, 11B...second learning data,
20...housing, 21...load-unload unit,
22...polishing unit, 22A...polishing section, 22B...polishing section,
22C...polishing section, 22D...polishing section, 23...substrate transport unit,
24...cleaning unit, 25...film-thickness measuring unit, 26...control unit,
30...production history information, 31...polishing-test information,
40...control section, 41...communication section, 42...learning-data storage section,

43...learned-model storage section,

50...control section, 51...communication section, 52...learned-model storage section,

220...polishing table, 221...top ring, 222...polishing-fluid supply nozzle,

223...dresser, 224...atomizer, 225...environment sensor

260...control section, 261...communication section, 262...input section, 263...output section,

264...memory section,

300...wafer history table, 301...polishing history table, 310...polishing-test table,

400...learning-data acquisition section, 401...machine-learning section,

500...information acquisition section, 501...state prediction section, 502...output processing section,

900...computer

2200...polishing pad, 2210...top ring body, 2211...carrier,

2212...membrane, 2212a...membrane pressure chamber, 2212b...membrane pressure chamber,

2212c...membrane pressure chamber, 2212d...membrane pressure chamber,

2213...retainer ring, 2214...retainer-ring airbag (retainer-ring pressing mechanism),

2214a...retainer-ring pressure chamber