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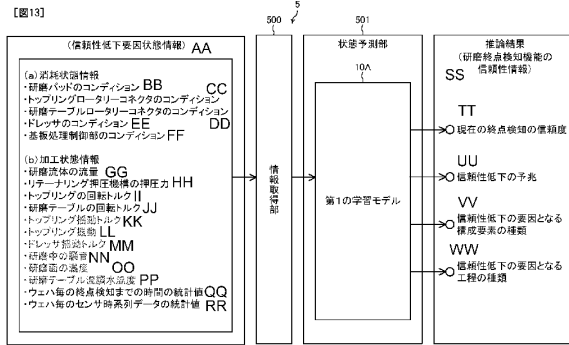
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(54) Title: INFORMATION PROCESSING DEVICE, INFERENCE DEVICE, MACHINE LEARNING DEVICE, INFORMATION PROCESSING METHOD, INFERENCE METHOD, AND MACHINE LEARNING METHOD

(54) 発明の名称: 情報処理装置、推論装置、機械学習装置、情報処理方法、推論方法、及び、機械学習方法

【図13】



10A ... First learning model
500 ... Information acquisition unit
501 ... State prediction unit
(a) ... Wear state information
(b) ... Processing state information
AA ... Reliability decrease cause state information
BB ... Condition of polishing pad
CC ... Condition of top ring rotary connector
DD ... Condition of polishing table rotary connector
EE ... Condition of dresser
FF ... Condition of substrate processing control unit
GG ... Flow volume of polishing fluid
HH ... Pressing force of retainer ring pressing mechanism
II ... Rotary torque of top ring
JJ ... Rotary torque of polishing table
KK ... Top ring wobble torque
LL ... Top ring vibration
MM ... Dresser wobble torque
NN ... Noise during polishing
OO ... Temperature on polishing surface
PP ... Temperature of polishing table temperature-adjusting water
QQ ... Statistical value of time before detection of end point for each wafer
RR ... Statistical value of sensor time-series data for each wafer
SS ... Inference results
(reliability information of polishing end-point detection function)
TT ... Reliability of current end-point detection
UU ... Sign of reliability decrease
VV ... Type of constituent element as a cause of reliability decrease
WW ... Type of step as a cause of reliability decrease

(57) Abstract: [Problem] To provide an information processing device that makes it possible to appropriately predict reliability information of a polishing end-point detection function, the reliability information indicating the reliability of an end-point detection function for detecting that a chemical mechanical polishing process has reached the end point. [Solution] An information processing device 5 comprises: an information acquisition unit 500 that acquires reliability decrease cause state information during a chemical mechanical polishing process being performed on a substrate by a substrate processing device 2, the reliability decrease cause state information including at least one of wear state informa-

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MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ,
NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT,
QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL,
ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG,
US, UZ, VC, VN, WS, ZA, ZM, ZW.

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tion indicating the state of wear of a constituent element of the substrate processing device 2, and processing state information indicating processing state during the polishing process; and a state prediction unit 501 that inputs the reliability decrease cause state information acquired by the information acquisition unit 500 into a learning model that has learned, by machine learning, the correlation between the reliability decrease cause state information and reliability information of a polishing end-point detection function indicating the reliability of an end-point detection function for detecting that the chemical mechanical polishing process has reached an end point, thereby predicting the reliability information of the polishing end-point detection function with respect to the reliability decrease cause state information.

(57) 要約: 【課題】化学機械研磨処理が終点に到達したことを検知する終点検知機能の信頼性を示す研磨終点検知機能の信頼性情報を適切に予測することを可能とする情報処理装置を提供する。【解決手段】情報処理装置5は、基板処理装置2により行われる基板の化学機械研磨処理における、基板処理装置2の構成要素の消耗状態を示す消耗状態情報、及び、研磨加工中の加工状態を示す加工状態情報、の少なくとも1つを含む、信頼性低下要因状態情報を取得する情報取得部500と、信頼性低下要因状態情報と、化学機械研磨処理が終点に到達したことを検知する終点検知機能の信頼性を示す研磨終点検知機能の信頼性情報との相関関係を機械学習により学習させた学習モデルに、情報取得部500により取得された信頼性低下要因状態情報を入力することで、信頼性低下要因状態情報に対する研磨終点検知機能の信頼性情報を予測する状態予測部501と、を備える。