

ROBOT AND METHOD FOR OPERATING A ROBOT

ABSTRACT

The invention relates to a method for operating a robot and to a robot, wherein the
5 robot comprises movable elements ELE_m which can be driven by actuators AKT_n , and is
designed to carry out a movement B with the elements ELE_m , and wherein the robot
comprises a detection system for determining signals $W_{G_k^B}(t)$ of a group of measurement
variables G_k^B characterizing the movement B of the elements ELE_m and the interactions
thereof with an environment. The proposed method comprises the following steps:
10 determining (10), by means of the detection system, reference signals $W_{G_k^B}^R(t)$ of the
measurement variables G_k^B during at least one execution of the movement B of the elements
 ELE_m which is in the form of a reference movement B; automatically determining (102),
based on the reference signals $W_{G_k^B}^R(t)$, using an adaptive method, a mathematical model
 $M_{G_k^B}$ for describing the reference movement B including the reference interactions by the
15 measurement variables G_k^B , during a normal execution of the movement B by the model
 $M_{G_k^B}$; predicting (103) signals $W_{G_k^B}^P(t)$ for describing the reference movement B, including
the reference interactions by the measurement variables G_k^B ; comparing (104) the signals
 $W_{G_k^B}(t)$ determined currently during the normal execution of the movement B with the
predicted signals $W_{G_k^B}^P(t)$ for determining a deviation $\Delta_{G_k^B}(t)$ between $W_{G_k^B}^P(t)$ and in
20 $W_{G_k^B}$; insofar as the deviation $\Delta_{G_k^B}(t)$ does not meet a predefined condition $BED_{G_k^B}$, based
on the deviation $\Delta_{G_k^B}(t)$ classifying (105) the current deviation $\Delta_{G_k^B}(t)$ in one of a number
I of predefined error categories $F_{i,G_k^B}(\Delta_{G_k^B}(t))$, wherein predefined control information
 $S_{F_{i,G_k^B}}(t)$ for the actuators AKT_k is produced for each of the error categories $F_{i,G_k^B}(\Delta_{G_k^B}(t))$,
and controlling (106) the actuators AKT_k taking into account the control information
25 $S_{F_{i,G_k^B}}(t)$.