

Title (en)  
ROBOT

Title (de)  
ROBOTER

Title (fr)  
ROBOT

Publication  
**EP 3580021 A2 20191218 (DE)**

Application  
**EP 18703993 A 20180207**

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Abstract (en)  
[origin: SG11201907005XA] ROBOT The invention relates to a robot having: a moving manipulator (102) driven by means of actuators (101a-c), a first unit (103) for determining external forces and/or external 5 torques acting upon the manipulator (102), and a second unit (104) for controlling and regulating the actuators (101a-c) as a function of the determined external forces and/or external torques acting upon the manipulator (102), wherein the second unit (104) is designed to control/to regulate the actuators for a predefined sub-space T1 of a working space AR of the manipulator (102) such that the manipulator (102) recedes flexibly into 10 the sub-space T1 upon the application of a determined external force and/or of a determined external torque onto the manipulator (102) along a projection<sup>→</sup> 1 of the force and/or of the torque, wherein the following applies:  $1 \subseteq$ , and the working space AR specifies all permitted translations and/or rotations of the manipulator (102), and to determine, for a space TK1 complementary to the sub-space T1, a projection<sup>→</sup> 1 of the 15 determined external force and/or of the determined external torque into the complementary space TK1, wherein the following applies:  $1 \cap 1 = \{ 0 \}$ ,  $1 \subseteq$ , and  $1 \subseteq$ , to classify the projection<sup>→</sup> 1 into one of several predefined classes with respect to amount and/or direction and/or time curve, wherein at least one event-discrete and/or continuous setpoint control command and/or one setpoint control rule is stored for 20 each predefined class, and to control/to regulate the actuators (101a-c) as a function of the classification of the projection<sup>→</sup> 1 based on the respective setpoint control command and/or setpoint control rule. (Fig. 1 accompanies abstract)

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