



(51) International Patent Classification:		62/189,670	7 July 2015 (07.07.2015)	US
A47J 27/62 (2006.01) B25J 9/16 (2006.01)		62/202,030	6 August 2015 (06.08.2015)	US
G05B 19/42 (2006.01)		14/829,579	18 August 2015 (18.08.2015)	US
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(22) International Filing Date:		(74) Agent: WALLINGER RICKER SCHLOTTER TOST-		
19 August 2015 (19.08.2015)		MANN; Patent- und Rechtsanwälte Partnerschaft mbB,		
		Zweibrückenstrasse 5-7, 80331 Munich (DE).		
(25) Filing Language:		(81) Designated States (unless otherwise indicated, for every		
English		kind of national protection available): AE, AG, AL, AM,		
(26) Publication Language:		AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,		
English		BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,		
		DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,		
(30) Priority Data:		HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,		
62/044,677	2 September 2014 (02.09.2014)	KZ, LA, LC, LR, LS, LU, LY, MA, MD, ME, MG,		
62/055,799	26 September 2014 (26.09.2014)	MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM,		
62/073,846	31 October 2014 (31.10.2014)	PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC,		
62/083,195	22 November 2014 (22.11.2014)	SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,		
62/090,310	10 December 2014 (10.12.2014)	TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.		
62/104,680	16 January 2015 (16.01.2015)			
62/109,051	28 January 2015 (28.01.2015)			
62/113,516	8 February 2015 (08.02.2015)			
62/116,563	16 February 2015 (16.02.2015)			
PCT/IB2015/000379		(84) Designated States (unless otherwise indicated, for every		
	20 February 2015 (20.02.2015)	kind of regional protection available): ARIPO (BW, GH,		
14/627,900	20 February 2015 (20.02.2015)	GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ,		
62/146,367	12 April 2015 (12.04.2015)	TJ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU,		
62/161,125	13 May 2015 (13.05.2015)	UZ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE,		
62/166,879	27 May 2015 (27.05.2015)	DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU,		

[Continued on next page]

(54) Title: ROBOTIC MANIPULATION METHODS AND SYSTEMS FOR EXECUTING A DOMAIN-SPECIFIC APPLICATION IN AN INSTRUMENTED ENVIRONMENT WITH ELECTRONIC MINIMANIPULATION LIBRARIES

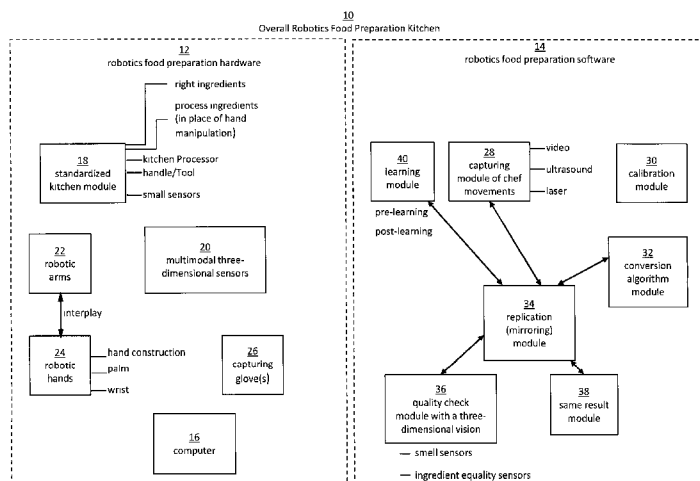


FIG. 1

(57) Abstract: Embodiments of the present disclosure are directed to the technical features relating to the ability of being able to create complex robotic humanoid movements, actions, and interactions with tools and the instrumented environment by automatically building movements for the humanoid; actions and behaviors of the humanoid based on a set of computer- encoded robotic movement and action primitives. The primitives are defined by motions/actions of articulated degrees of freedom that range in complexity from simple to complex, and which can be combined in any form in serial/parallel fashion. These motion-primitives are termed to be minimanipulations and each has a clear time-indexed command input-structure and output behavior/performance profile that is intended to achieve a certain function. Minimanipulations comprise a new way of creating a general program-mable-by-example platform for humanoid robots. One or more minimanipulation electronic libraries provide a large suite of higher-level sensing-and-execution sequences that are common building blocks for complex tasks, such as cooking, taking care of the in-firm, or other tasks performed by the next generation of humanoid robots.



LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, KM, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))*

Published:

— *with international search report (Art. 21(3))*