

Results of GLMMLASSO analyses for evaluating GEARS metrics at different surgical subtasks.

GEARS metrics	Visual metrics*	Coefficient	P-value	Subject variance	R ² of the developed model
Visual metrics associated with each GEARS Metric in Blunt Dissection					
Depth perception	M1	0.35	0.001	1.39	0.88
	M11	0.28	0.006		
Bimanual dexterity	M1	0.6	0.002	1.74	0.90
	M12	0.23	0.014		
Efficiency	M12	-0.25	0.016	1.16	0.75
Force sensitivity	M2	-0.16	0.04	1.8	0.86
Robotic control	M1	-0.25	0.005	0.88	0.85
	M6	0.3	0.004		
	M9	-0.16	<0.001		
Autonomy	M3	-0.11	0.02	1.47	0.93
	M6	0.21	0.01		
	M9	-0.06	0.04		
	M10	-0.14	<0.001		
	M11	0.18	0.01		
Visual metrics associated with each GEARS Metric in Retraction					
Depth perception	M1	0.28	<0.001	1.31	0.85
Bimanual dexterity	M1	0.26	<0.001	1.8	0.89
	M11	-0.18	<0.001		
	M12	0.18	<0.001		
Efficiency	M1	0.17	0.01	1.57	0.79
	M10	0.07	0.003		
	M11	-0.18	<0.001		
	M12	-0.31	<0.001		
Force sensitivity	M1	-0.16	0.008	1.81	0.84
Robotic control	M1	-0.33	<0.001	1.05	0.76
	M9	-0.11	<0.001		
	M12	0.11	0.015		
Autonomy	M10	-0.05	<0.001	1.78	0.93
	M12	-0.14	<0.001		
Visual metrics associated with each GEARS Metric in Cold Dissection					
Depth perception	M1	0.36	<0.001	1.68	0.89
	M11	-0.5	<0.001		
Bimanual dexterity	M1	1.48	<0.001	2.08	0.89
	M2	-1.07	<0.001		
	M11	-0.39	<0.001		
Efficiency	M1	1.57	<0.001	1.64	0.82
	M2	-1.11	<0.001		
	M3	0.26	0.001		
	M4	-0.29	<0.001		
Force sensitivity	M1	1.04	<0.001	2.18	0.91
	M2	-0.84	<0.001		
Robotic control	M5	-0.25	0.005	1.1	0.8
	M6	-0.3	0.001		
	M9	-0.09	0.01		
Autonomy	M12	-0.24	<0.001	1.68	0.96
Visual metrics associated with each GEARS Metric in Burn Dissection					
Depth perception	M11	0.31	<0.001	1.31	0.92

Bimanual dexterity	M10	-0.07	<0.001	1.66	0.94
	M12	0.22	<0.001		
Efficiency	M12	-0.72	<0.001	1.99	0.89
Force sensitivity	M2	-0.75	<0.001	2.12	0.87
	M7	0.18	<0.001		
Robotic control	M8	0.14	<0.001	1.45	0.79
	M11	-0.18	0.013		
	M12	0.24	0.017		
Autonomy	M1	-0.37	0.019	1.57	0.91
	M7	0.08	0.002		
	M8	0.09	<0.001		
	M10	-0.1	<0.001		

*M1: Average pupil diameter, left eye; M2: Average pupil diameter, right eye; M3: Entropy of pupil diameter, left eye; M4: Entropy of pupil diameter, right eye; M5: rate of fixation time points; M6: rate of saccade time points; M7: Rate of gaze direction change, left eye, the horizontal direction; M8: Rate of gaze direction change, left eye, the vertical direction; M9: Rate of gaze direction change, right eye, the horizontal direction; M10: Rate of gaze direction change, right eye, the vertical direction; M11: length of the eye trajectory, left eye; M12: length of the eye trajectory, right eye.