

APPENDIX A
USER STUDY PARTICIPANTS

ID	Age	Gender	Ethnicity	Hair Length [mm]	NARS Scale [7-pt]
P1	26	Man	Asian	75	4.6
P2	22	Man	Latino	400	2.2
P3	24	Man	Asian	110	2.6
P4	25	Man	Latino	50	1.4
P5	27	Man	S Asian	100	3.2
P6	20	Man	Asian	80	4.2
P7	26	Woman	Asian	381	3.2
P8	27	Man	White	45	3.0
P9	24	Woman	Asian	400	3.2
P10	27	Man	S Asian	50	3.2
P11	25	Man	Asian	65	3.6
P12	25	Woman	Black	508	4.6

TABLE III: Demographic Data with NARS Scores

APPENDIX B
ADDITIONAL FORCE RESULTS

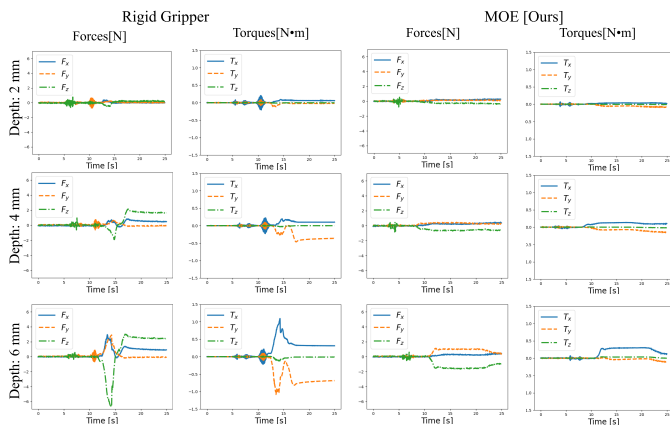


Fig. 12: Full set of force and torque readings for the comparison between a rigid gripper and proposed MOE.

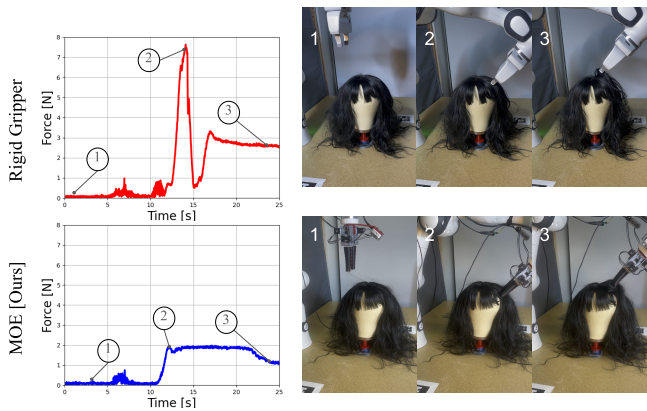


Fig. 13: Hair grasping task progression on a sensorized mannequin head.

APPENDIX C
QUESTIONNAIRE

Pre-study questions (short response)

- Age _____
- Gender _____
- Ethnicity _____

I see myself as

...someone who tends to find fault with others.



...someone who does a thorough job.



...someone who is reserved.



...someone who is relaxed, handles stress well.



...someone who has an active imagination.



...someone who is generally trusting.



...someone who tends to be lazy.



...someone who values artistic, aesthetic experiences.



...someone who is outgoing, sociable.



...someone who gets nervous easily.



I would feel very nervous just standing in front of a robot



In general, I would rely on a machine to assist me.



My tendency to trust machines is high.



It is easy for me to trust machines to do their job.



I am likely to trust a machine even when I have little knowledge about it.



Fig. 14: Pre-Study Questionnaire.

APPENDIX D
INSTITUTIONAL REVIEW

The Institutional Review Board approved the protocol for the trials and the study (STUDY2023_00000502).

Task [Head Patting, Finger Combing, Hair Grasping]

Method 2

I felt comfortable during the interaction in terms of force/pressure.



The pressure and force applied by the robot felt consistent.



The robot performs reliably.



I can trust the robot to be safe.



The robot seems practical.



The robot was effective.



The robot was too forceful.



The robot performed the task successfully.



I was at ease during the interaction.



Fig. 15: Questionnaire given to participants after a trial with a system for a task.

After Both Methods

I was more comfortable with the first trial.



The robot in the first trial seemed more useful.



The force was more consistent in the first trial.



Fig. 16: Questionnaire given to participants after trials with both systems for a task.