



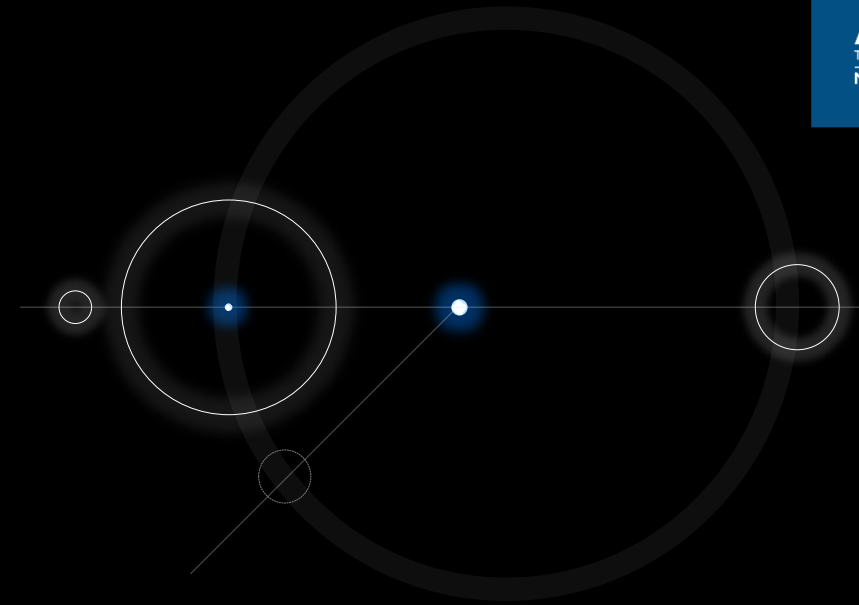
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ROBOT PERSONALITY

JINGWEN MAO
HO SEOK AHN

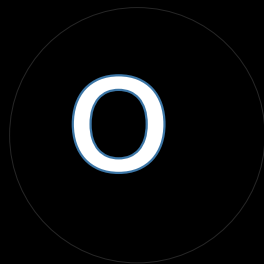
- An overarching goal in robotics is to design robots with appealing personalities to users
- The aim of our current study was to identify attractive characters from popular movie/TV series that can be good examples for service robots.
- We also measured the personality of each character to identify the appropriate personality traits for service robots.



INTRODUCTION

The Big Five Personality Model

The framework describes personality with five broad dimensions, with each representing a bipolar factor [Goldberg, 1992].



Openness to
experience

An individual's degree
of preferring novelty



Conscientiousness

People's preferences
of organization, or
flexibility



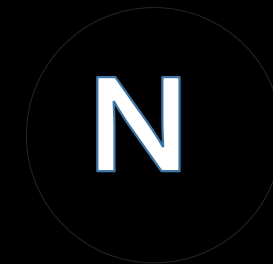
Extraversion

To what extent
people are being
sociable, and seeking
excitement



Agreeableness

Individuals' tendency
to be cooperative



Neuroticism

Individuals' tendency
to express negative
emotions, and lack of
emotional stability

Extraversion vs Introversion



A large body of HRI literature emphasized the extraversion-introversion continuum.



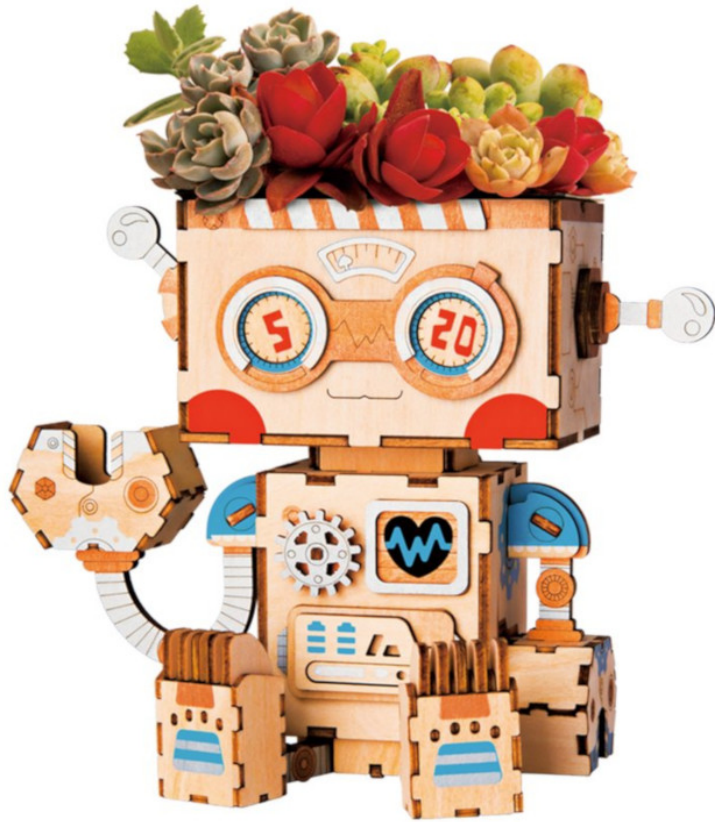
Studies argued that robots with extravert personality are more favored, and more likely to humanize [Aly & Tapus, 2013; Robert, 2018; Salem et al., 2015]



Some studies showed that people may prefer robots having a similar personality with them [Hwang & Lee, 2013; Park et al., 2012; Tapus et al., 2008]; while other studies suggested a more complementary view on robots' personality [Lee et al., 2006]



We have considered both extravert and introvert robots



SET THE REST 4 FACTORS OF BIG 5

O

High

Positively correlated with the satisfaction and stability of an intimate relationship

C

High

A better relationship with the care recipient when caregivers are more conscientious

A

High

Contribute to the satisfaction and intimacy in a relationship

N

Low

A higher level of neuroticism tend to jeopardize social relationships



Referring personalities from popular movie/TV characters



Popular characters are demonstrated to be favored by the general public



Obtain systematic scores for the OCEAN traits, and apply a similar combination of the traits when designing robots personality

SELECTING ATTRACTIVE CHARACTERS

Selected Characters

5 humans, 10 animated humans, 5 robots characters, and 4 real robots



Measuring Personality Traits



8 Participants (4 males), age 20 to 60



Watched 1-3 YouTube videos of each character



Rate the personality traits for the selected characters



Ten-item personality inventory (TIPI) [Gosling et al., 2003]

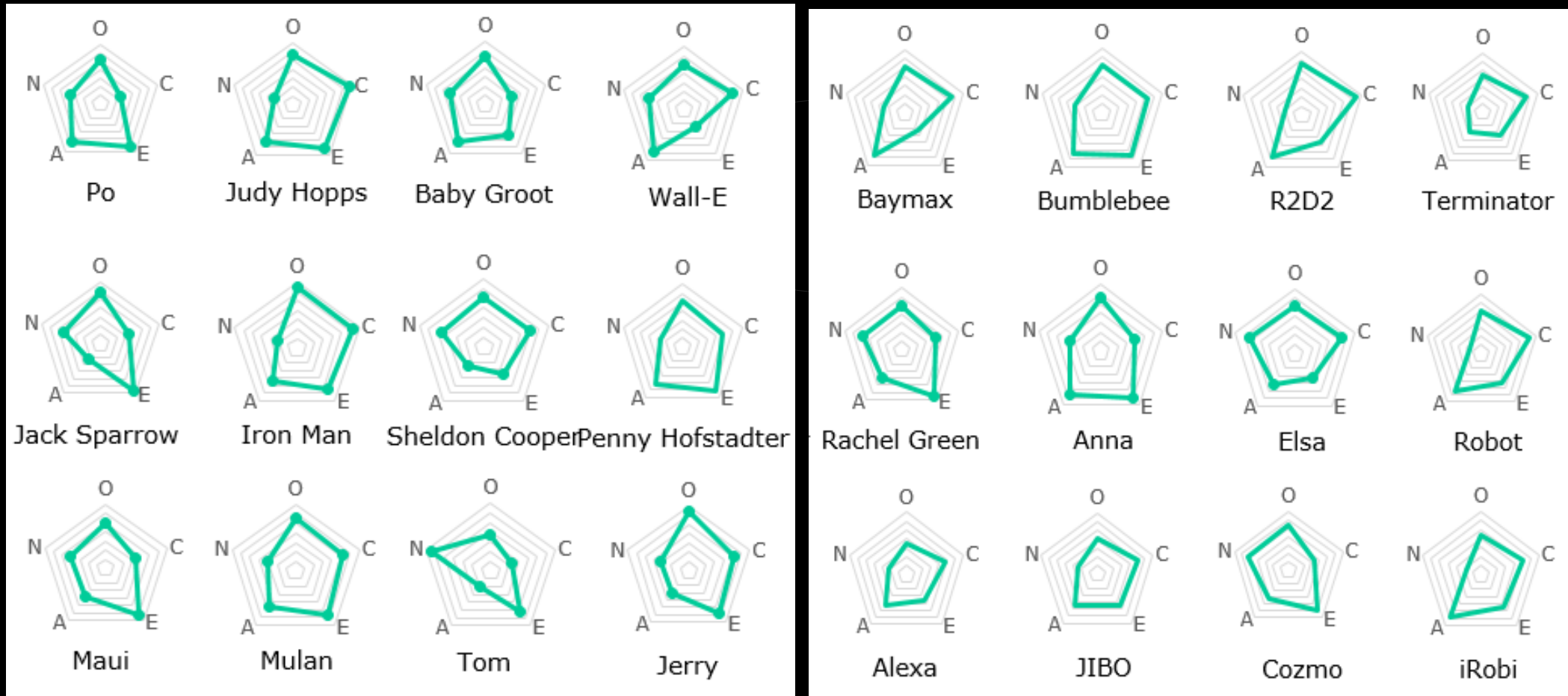
TIPI



"R" denotes reverse-scored items.

	Disagree strongly	Disagree moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree strongly
	1	2	3	4	5	6	7
[O] Open to new experiences, complex							
[C] Dependable, self-disciplined							
[E] Extraverted, enthusiastic							
[A] Sympathetic, warm							
[N] Anxious, easily upset							
[OR] Conventional, uncreative							
[CR] Disorganized, careless							
[ER] Reserved, quiet							
[AR] Critical, quarrelsome							
[NR] Calm, emotionally stable							

TUPI score of 24 selected characters



Rules to select attractive characters



Home Robot

1

Group A
Extrovert

2

Group B
Neutral

3

Group C
Introvert

All characters on Big 5 map (extroversion axis)

Characters	E	O	C	A	N
Jack Sparrow	6.7	5.8	3.4	2.2	4.3
Rachel Green	6.4	5.0	4.2	3.9	4.8
Penny Hofstadter	6.3	5.2	4.7	5.2	2.6
Po	6.2	5.1	2.5	5.6	3.6
Maui	6.2	4.9	3.5	3.9	4.1
Judy Hopps	6.1	5.7	6.7	5.1	2.1
Anna	6.0	5.6	3.8	5.6	3.6
Cozmo	6.0	5.4	3.4	4.1	5.2
Jerry	5.7	6.5	5.2	3.0	3.2
Mulan	5.7	5.6	5.3	4.6	3.1
Iron Man – Tony Stark	5.5	6.5	6.3	4.4	2.1
Bumblebee	5.5	5.2	5.4	5.4	3.1
Tom	5.2	3.7	2.4	1.9	6.4
Jibo	4.6	4.1	5.1	4.6	2.4
iRobo Q	4.4	4.4	5.1	5.9	1.8
Baby Groot	4.3	5.4	3.0	5.2	4.1
Robot	4.1	5.1	6.3	5.4	1.4
R2D2	3.7	5.6	6.5	5.6	2.0
Alexa	3.6	3.4	4.9	4.3	2.1
Sheldon Cooper	3.5	5.1	5.1	2.6	4.6
Terminator	3.4	4.4	5.6	2.9	2.0
Elsa	3.3	5.1	5.4	4.1	5.4
Baymax	2.4	5.1	5.6	5.8	2.4
Wall-E	2.3	5.0	5.7	5.8	4.1

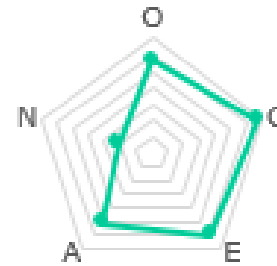
Home Robot

1

Group A
Extrovert



Judy Hopps

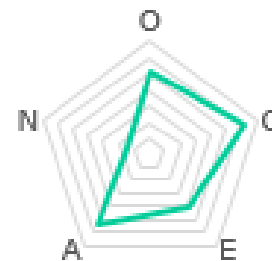


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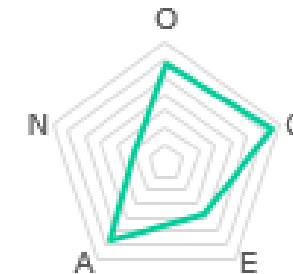
Group B
Neutral



Robot



R2D2

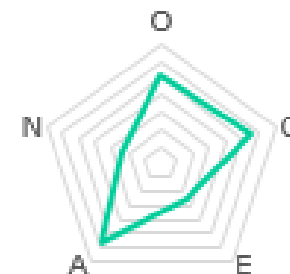


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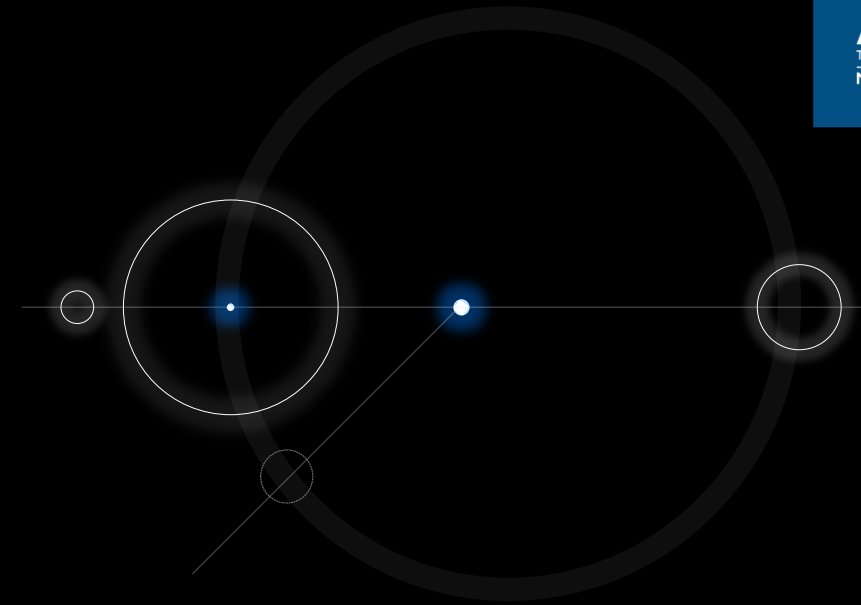
Group C
Introvert



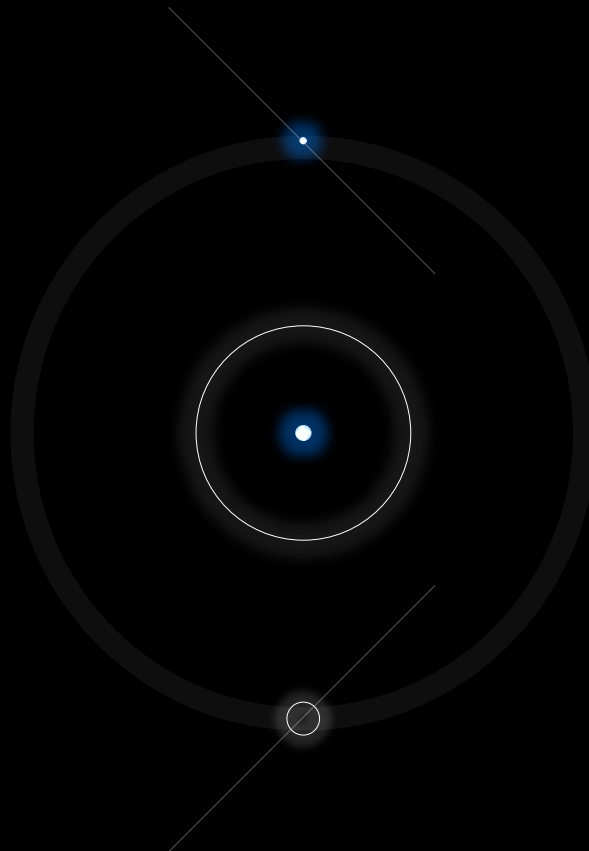
Baymax



- The current approach of using popular characters will provide extra dimensions in the robot personality design.
- Current study was based on 8 participants. We are recruiting more participants.
- https://auckland.au1.qualtrics.com/jfe/form/SV_8wimIRGrNkcAMGF
- Future studies can investigate characters with different combinations of the Big Five personality traits.



CONCLUSION



THANK YOU

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