BLURRING HUMAN-ROBOT DISTINCTIONS: ANTHROPOMORPHIC APPEARANCE IN SOCIAL ROBOTS AS A THREAT TO HUMAN DISTINCTIVENESS
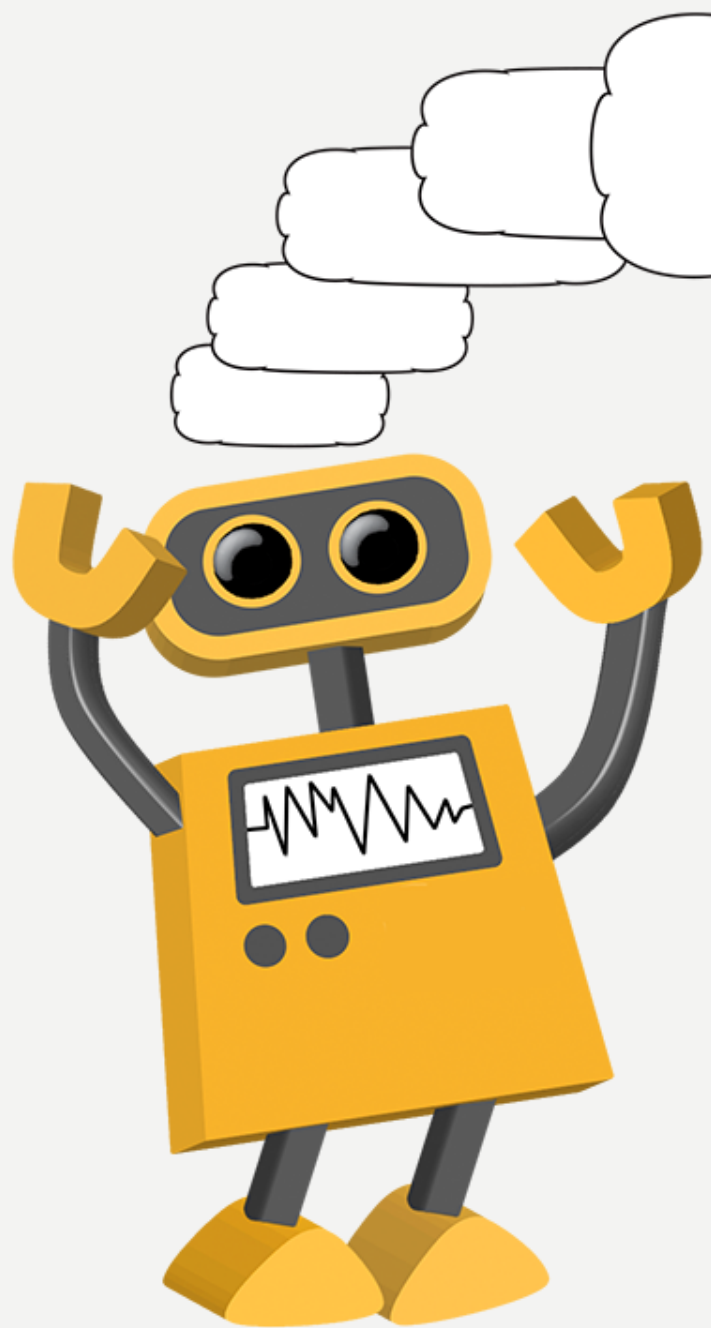
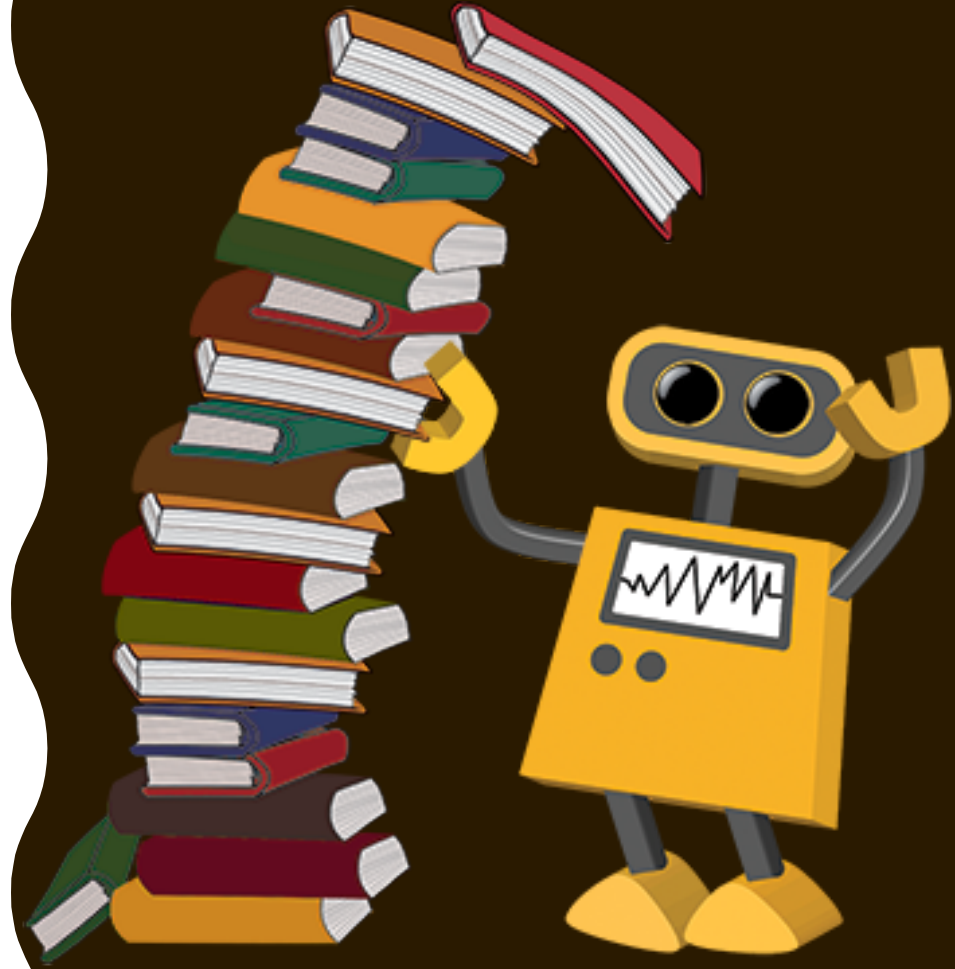## FERRARI, PALADINO & JETTEN

Chahak Agrawal

Brief Summary of the Paper

INTRODUCTION

- **Social acceptance of social robots**
- **Threat to human distinctiveness**
- **Uncanny valley**
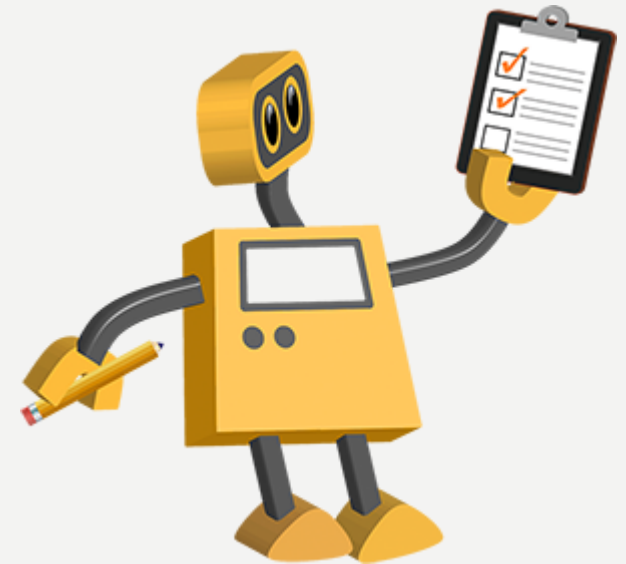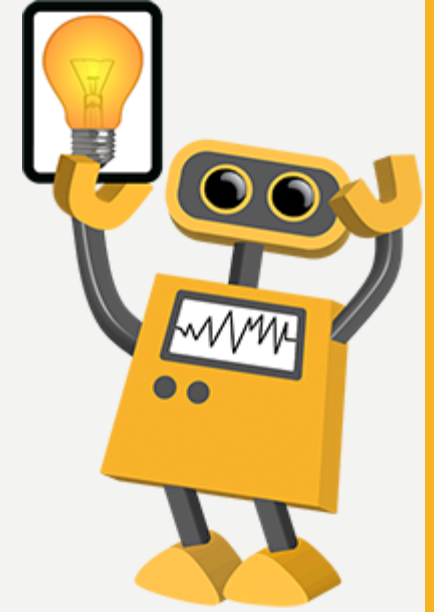- **Robot anthropomorphic appearance**
- **Androids**

HYPOTHESIS

"that androids in particular should be perceived to threaten intergroup distinctiveness, are perceived to undermine intergroup boundaries and threaten human identity"

# STUDY 1

- Hypotheses
- Methods
- Results

HYPOTHESES

"perceived damage to humans and their identity would be the highest for androids and lowest for mechanical robots, with damage perceptions for humanoids in between these two conditions"

"robot anthropomorphic appearance, as it elicits a threat to distinctiveness, would be responsible for the perceived potential damage of the robot to human essence and identity"
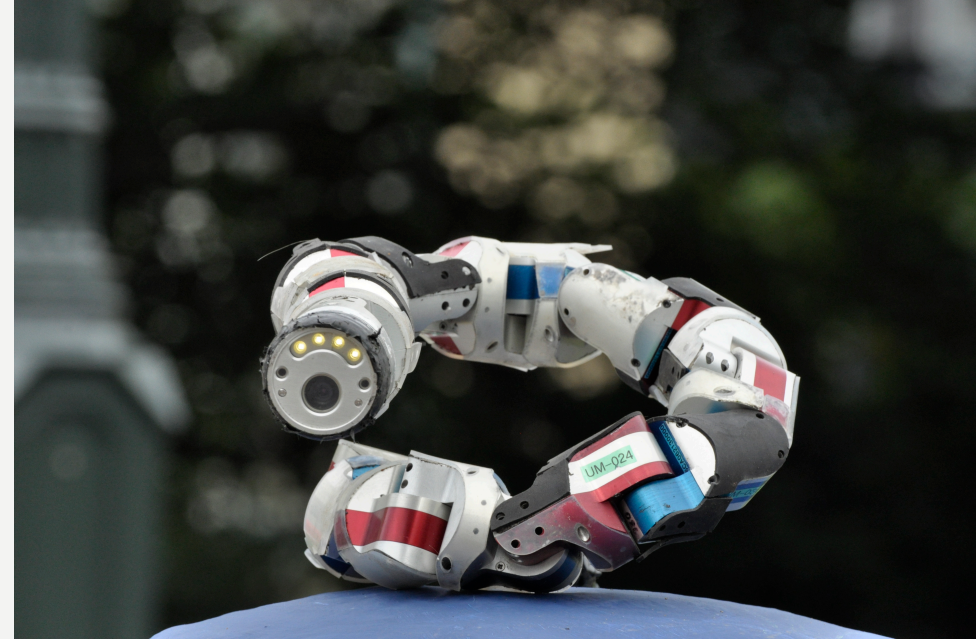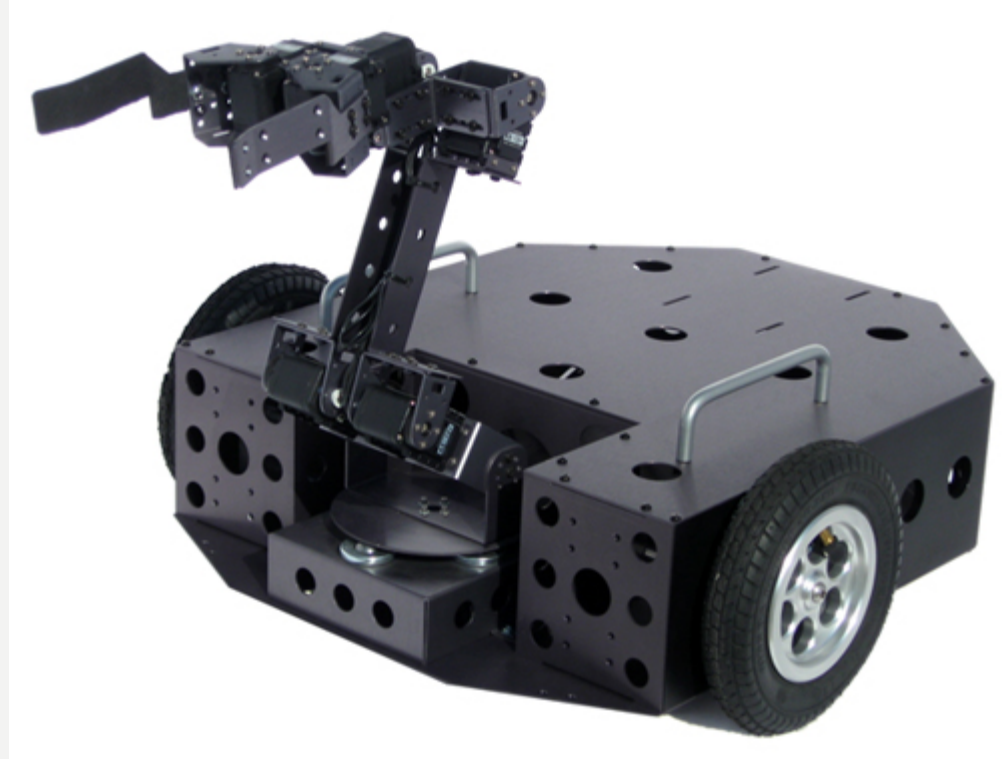
PHOTOS OF ROBOTS

PILOT STUDY

MECHANICAL ROBOTS
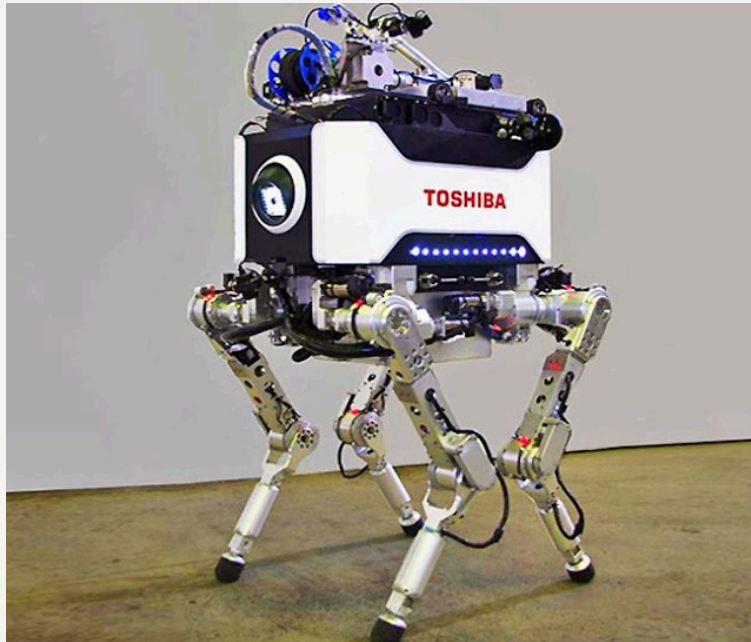
Four legged explorer robot of Toshiba used at the Fukushima Daiichi nuclear implant

Modular Snake robot developed by the Robotics Institute at
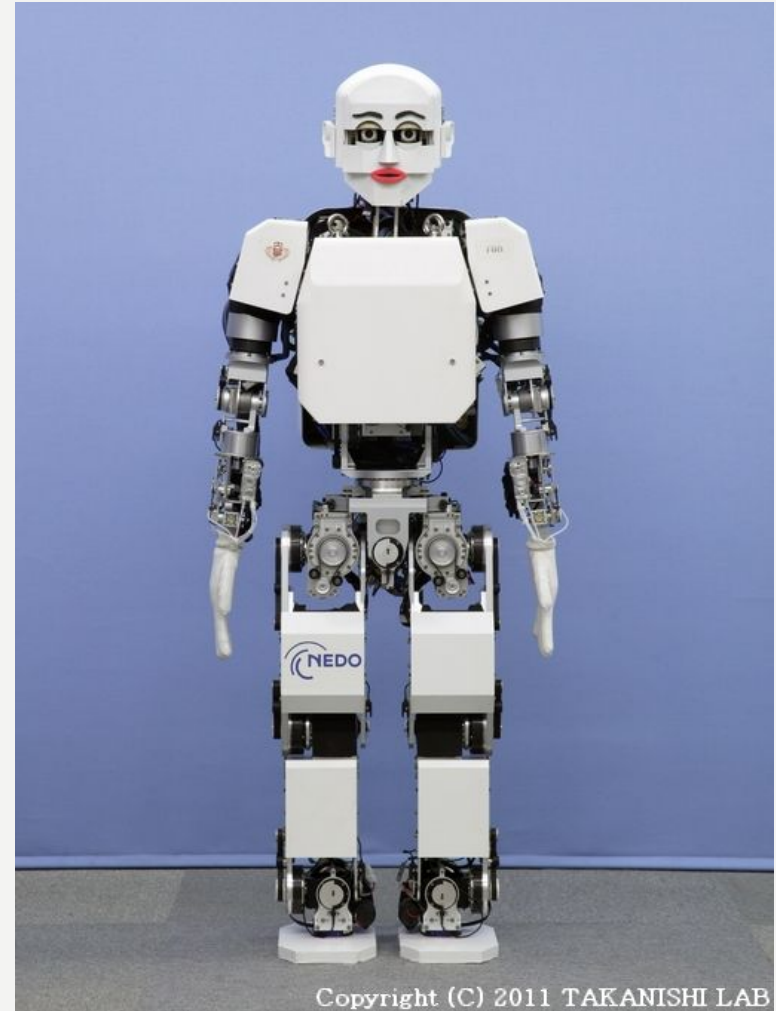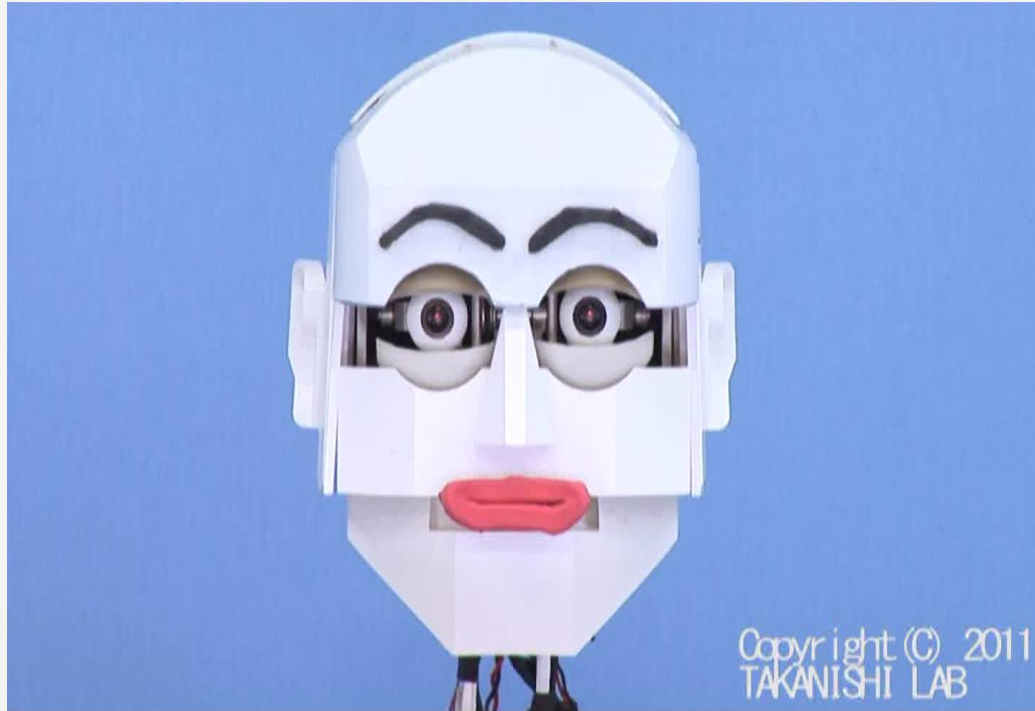Carnagie Mellon University called Uncle Sam

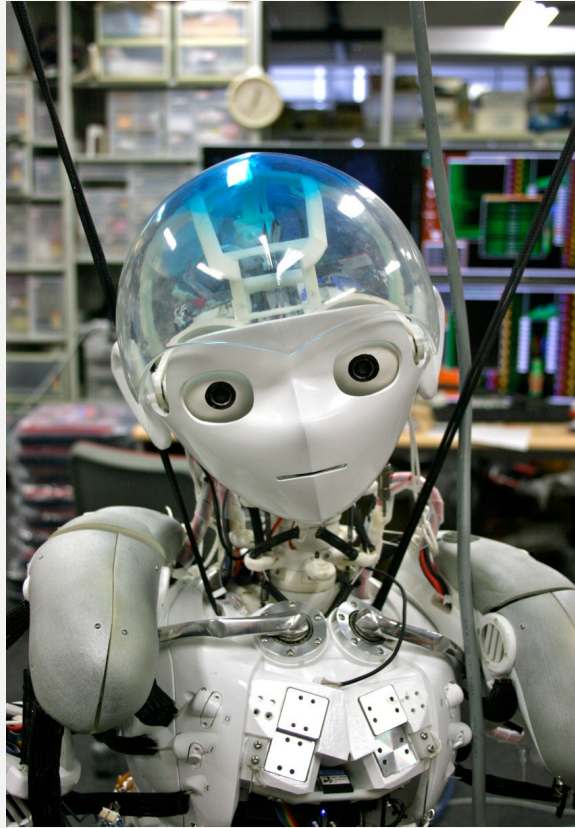Nomad Heavy Duty Wheeled Robot of CrustCrawler Robotics

HUMANOIDS

HRP-4 developed by AIST and Kawasaky Heavy Industries

The expressive robot Kobian of Waseda University

Advanced musculoskeletal humanoid robot Kojiro created at
the JSK Laboratory at the University of Tokyo

ANDROIDS

Jules robots of Hanson Robotics

Philip K Dick

Geminoid DK robots developed by Kokoro for the Aalborg
University in Northern Denmark

METHODS

Between-subjects design

Participants: total 182, 91women, 89 men, 2 missing values, aged between 19 and 63 years

Independent variable: photos of the three types of robots

- Dependent variable: Psychological scale for general impressions of humanoids (PSGIH) by Kamide et al. , Anthropomorphic appearance, Robotic appearance, Damage to humans and their identity, Mind experience, Mind agency and High human nature traits.
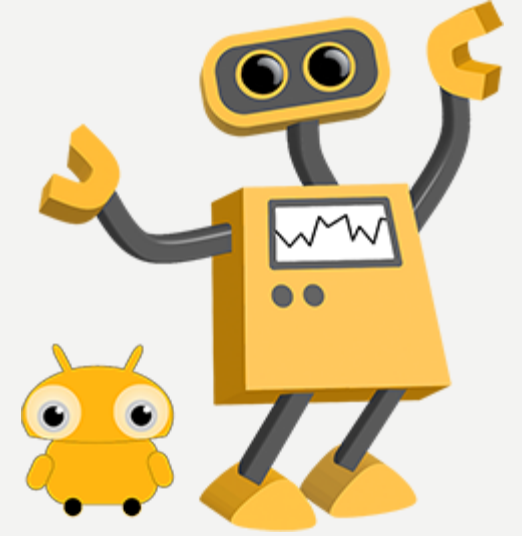
RESULTS
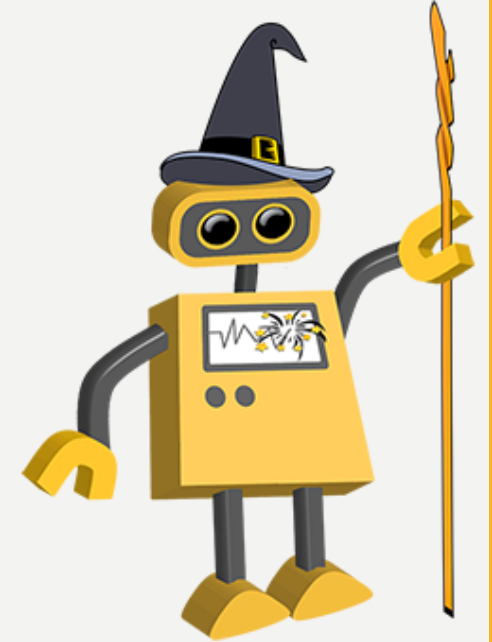
Androids were judged as most similar to human beings, followed by humanoids and mechanical robots.

Male and female participants differed in how they judged androids and humanoids appearance.
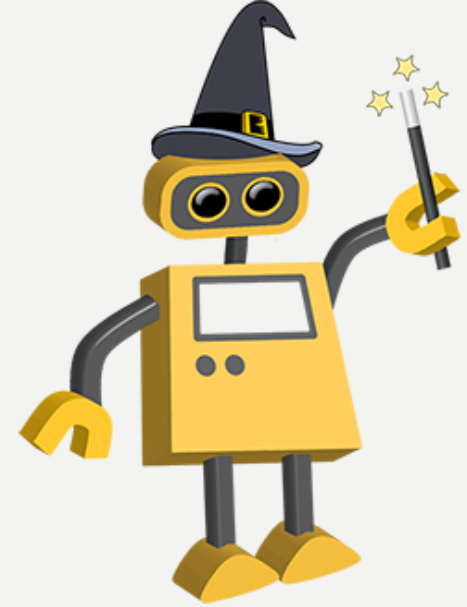
Robot anthropomorphic appearance, and no other aspects on which the three types of robots differed, was responsible for the perceived damage that the robot could cause to humans and their identity

STUDY 2

- Hypotheses
- Methods
- Results
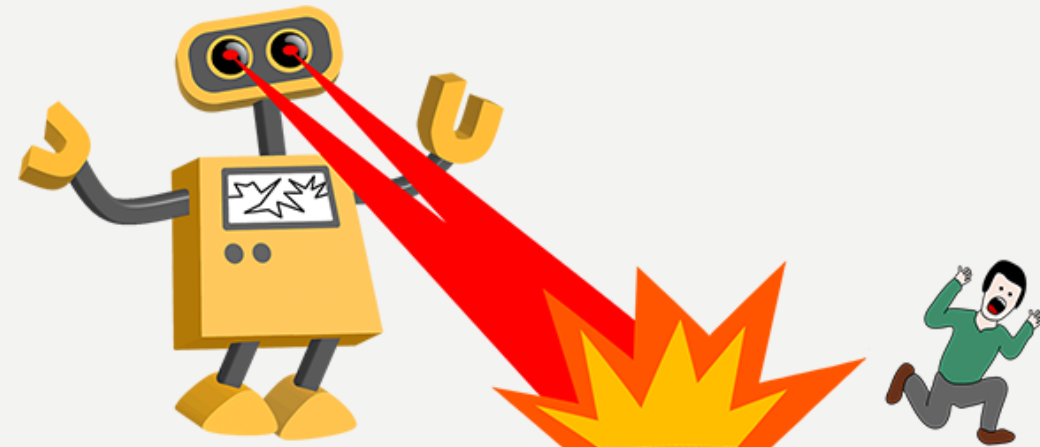
HYPOTHESES

"perception of undermining human–machine distinctiveness would be highest for the androids and lowest for mechanical robots with treat perceptions for humanoids falling in between these two conditions"

"anthropomorphic appearance would elicit the perception that human distinctiveness is undermined, and this in turn would be responsible for the perception of potential damage to humans and human identity when robots enter into society"
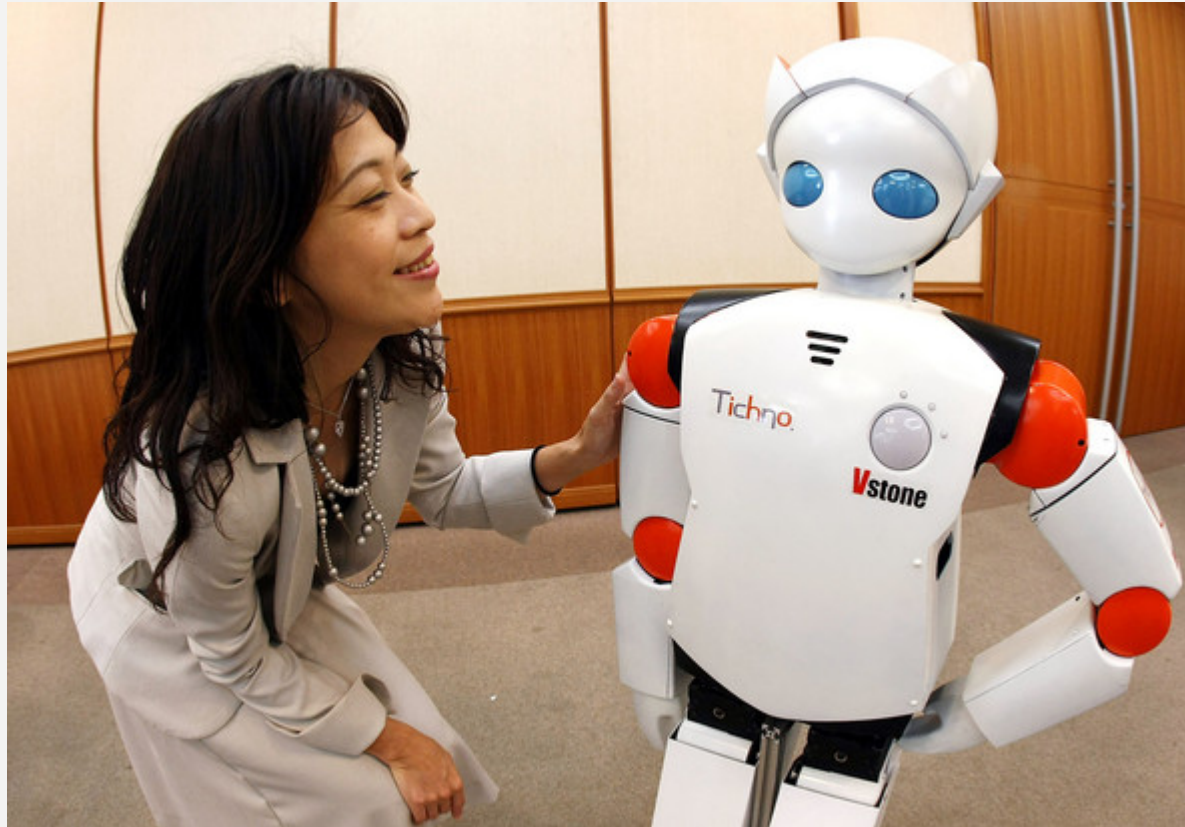
ADDITIONAL PHOTOS OF ROBOTS

WowWee's Rovio

TP-600-270'' developed by SuperDroid Robots

Wabian-2 of Waseda University

Tichno R of V-Stone

FACE android developed by FACE Lab of University of Pisa

METHODS

Within-subjects design

Participants: total 51, 49 females, 2 males

Independent variable: photos of the three types of robots

Dependent variable: Anthropomorphic appearance, Undermining human–machine distinctiveness and Damage to humans and their identity.

RESULTS

Androids were rated as most anthropomorphic, most of a threat to the distinction between humans and machines and most damaging to humans as a group, and to their identity
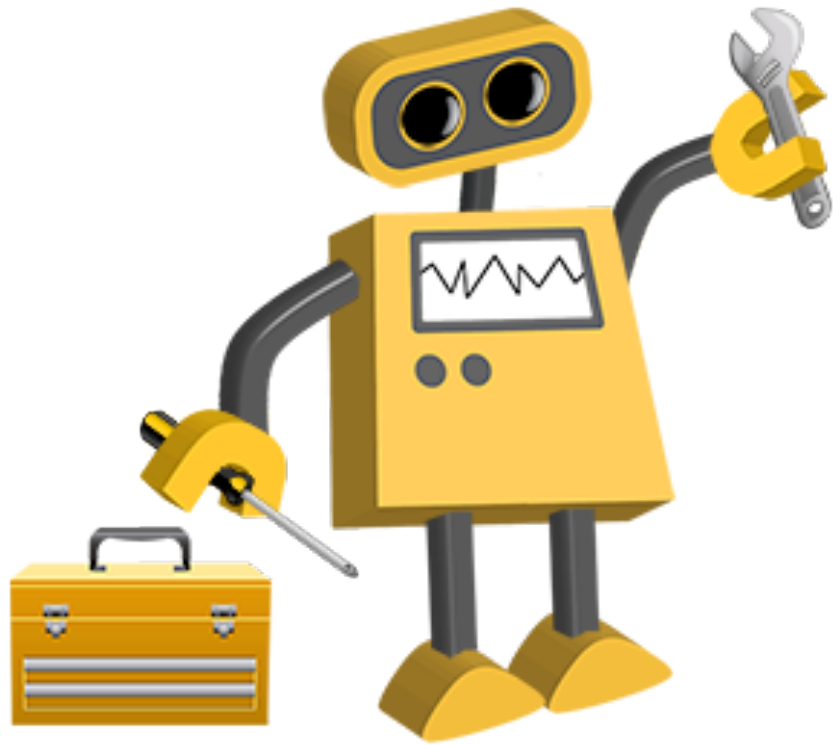
ratings of robot anthropomorphic appearance was responsible for the differences in the perception of undermined human–machine distinctiveness

judgments of undermined human–machine distinctiveness accounted for the differences in the perceived robots damage to humans and their identity
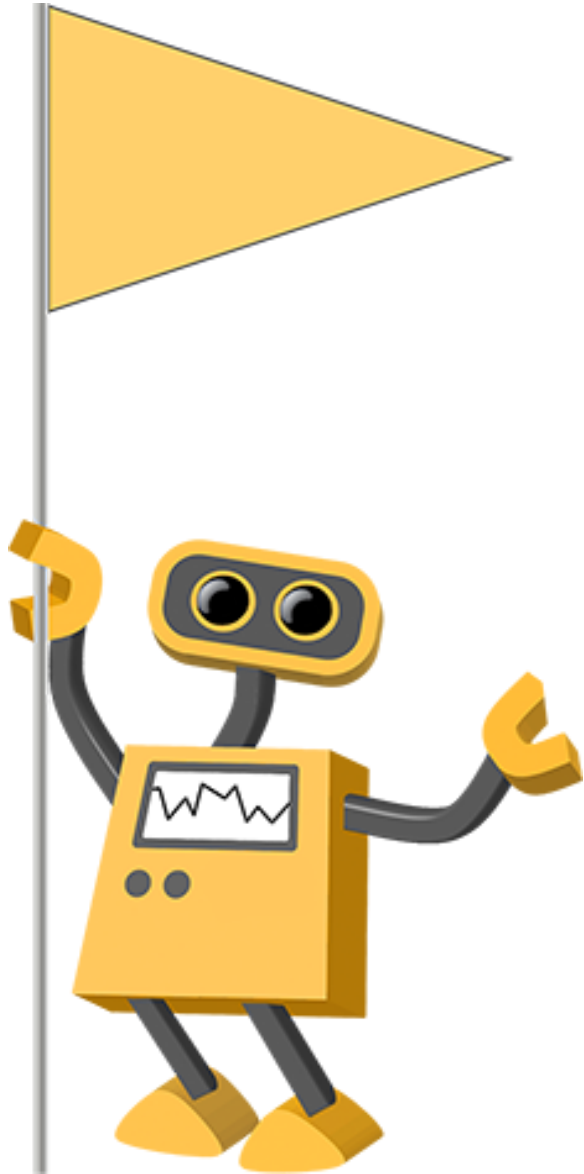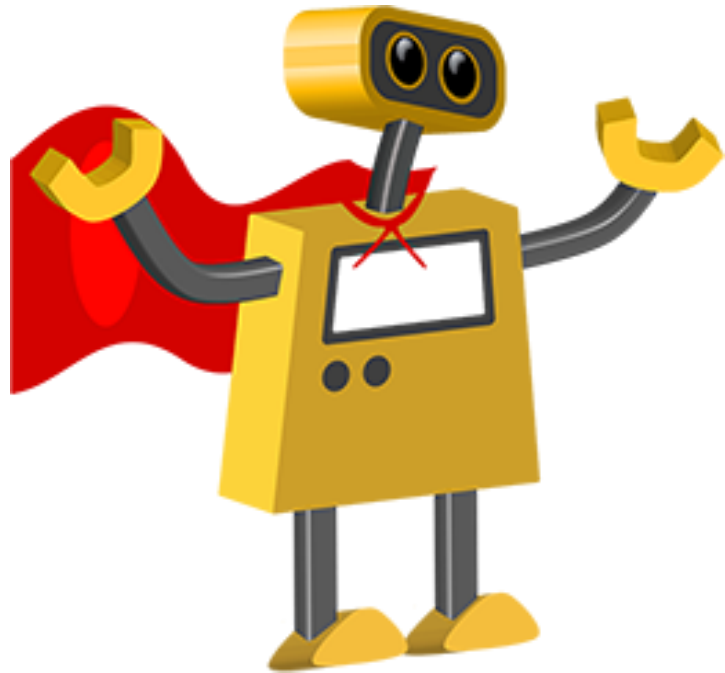
DISCUSSION

Suitability of Research Methods and General Discussion

QUESTIONS?

THANK YOU!