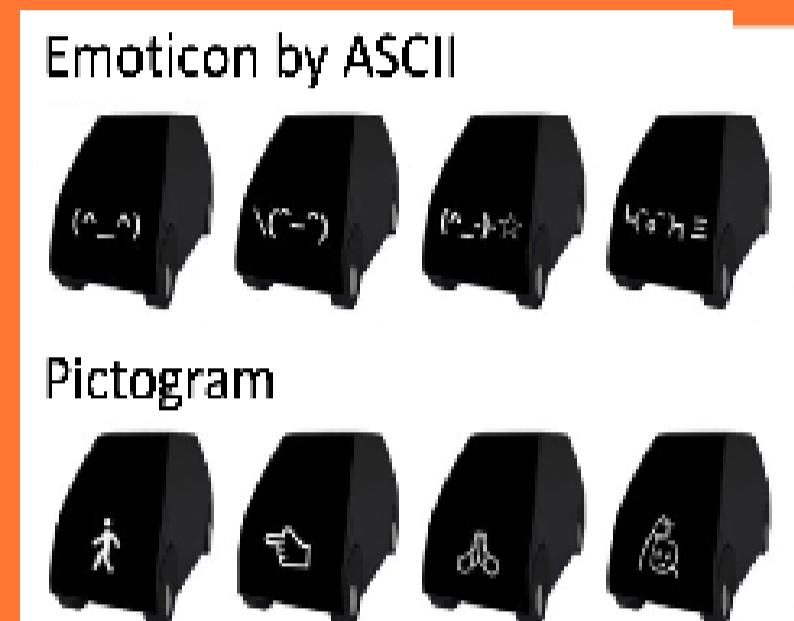




UROP RESEARCH PROJECTS

By emphasizing improving interactions between AV and pedestrians through graphic messaging displayed on the exterior of the vehicle, this project aims to aid future HMI



FIVE TYPES OF GRAPHICS WERE INVESTIGATED

Using an online survey with 440 participants from Japan and Singapore, we found that pictograms were the most preferred graphic type, followed by graphics with eyes and pictogram, and graphics with eyes only.

In both nations, shared AVs are rapidly being trialed and implemented for public use. While we found a positive attitude towards the use of graphic messages on AVs. Pictograms were the most preferred by participants in both countries, but particularly so in Singapore.

Cultural Differences

Participants in Japan showed greater preference for graphics with eyes and with a combination of eyes and pictogram. Further, there were no noted differences in the preferences between demographics, which suggests that the graphics tested in this study appealed universally to the adult population.

DISCUSSION AND CONCLUSION

1 Strong Pictogram Preference

Graphics should clearly convey the intentions of the AV and the action to be taken by the surrounding pedestrians and road users. These pictograms should also be universally

2 Foundation for Further Research

Further HMI research in the area of developing graphic messages for AVs to increase acceptance and reduce feelings of worry and fear around AVs. Future studies can also explore different combinations of graph-

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	Pictogram OR (95% CI)	Eyes and pictogram OR (95% CI)	Eyes only OR (95% CI)
Attitude	0.91 (0.61, 1.39)	0.84 (0.58, 1.21)	1.23 (0.78, 1.96)
Positive emotion	0.93 (0.62, 1.39)	1.98 (1.38, 2.85)***	1.09 (0.69, 1.73)
Negative emotion	0.79 (0.60, 1.04)	1.02 (0.79, 1.31)	0.89 (0.64, 1.24)
Gender			
Female (ref)	1.00	1.00	1.00
Male	1.28 (0.80, 2.05)	0.88 (0.58, 1.33)	0.80 (0.48, 1.33)
Age			
19-30 (ref)	1.00	1.00	1.00
31-50	0.84 (0.46, 1.51)	0.59 (0.35, 1.01)	1.12 (0.59, 2.13)
51-65	0.92 (0.45, 1.89)	0.50 (0.26, 0.99)*	0.44 (0.18, 1.07)
66 and above	0.66 (0.28, 1.58)	0.44 (0.18, 1.05)	0.55 (0.18, 1.63)
Driving profile			
No license (ref)	1.00	1.00	1.00
Rarely drive	0.79 (0.39, 1.63)	0.97 (0.54, 1.76)	1.05 (0.49, 2.27)
2-3 times a week	1.23 (0.48, 3.12)	0.65 (0.31, 1.36)	1.64 (0.68, 4.01)
2-3 times a month	0.85 (0.40, 1.80)	0.79 (0.41, 1.50)	0.53 (0.22, 1.27)
Drive everyday	0.99 (0.45, 2.17)	1.23 (0.62, 2.45)	0.58 (0.24, 1.40)
Country			
Japan (ref)	1.00	1.00	1.00
Singapore	3.82 (2.20, 6.64)***	0.58 (0.35, 0.96)*	0.17 (0.09, 0.31)***

Note: *p<.05; **p<.01; ***p<.001

RESULTS OF LOGISTIC REGRESSIONS PREDICTING ACCEPTANCE OF THREE GRAPHIC MESSAGES