FACTORS AFFECTING PEDESTRIANS’ TRUST IN AUTOMATED VEHICLES

ABSTRACT
A lack of appropriate trust can be a main barrier to successfully introducing automated vehicles (AVs) into the market. The objective of this study is to gain a deep understanding of factors that will influence the development of pedestrians’ trust in AVs over time. By integrating the reviewed studies and related theories, a theoretical model has been proposed and developed, comprising three layers of variability in pedestrian-AV trust (dispositional trust, situational trust, and learned trust).

INTRODUCTION
Trust is recognised as a primary determinant of acceptance of AVs [1]. In the field of trust research, the major goal is not to maximise trust, but to precisely adjust the trust levels of pedestrians to a system’s actual capabilities and performance (i.e., calibration of trust) [2], [3]. A number of studies have demonstrated that pedestrians may have inappropriate levels of trust in AVs, including overtrust and distrust [4], [5]. Before seeking solutions to calibrate trust, it is vital to first understand which factors are possibly responsible for the development of pedestrians’ trust in AVs.

METHODOLOGY
This study systematically reviewed the literature regarding trust in automation, trust in AVs, and the interaction between vehicles and pedestrians. We used the following inclusion criteria: 1) Examines the topic of trust of pedestrian-vehicle interaction mainly from the viewpoint of human factors; 2) Identifies factors related to trust or trust-related behaviours when interacting with automated systems; 3) Reports new findings that can, directly or indirectly, contribute to the study of pedestrians’ trust in AVs. A total of 25 papers met the selection criteria and were eligible for this study.

THEORETICAL MODEL

Firstly, dispositional trust refers to the overall long-term tendency of a pedestrian to trust AVs, independent of situations or moments [2]. Secondly, regarding situational trust, the formation and development of trust can vary greatly in different situations. Lastly, learned trust represents a pedestrian’s evaluation of a system, based on past experience or current interactions [2].

CONCLUSION
The proposed model of pedestrian-AV trust is useful to transportation researchers, practitioners, designers and AV manufacturers for designing AVs and related transportation systems for the purpose of successfully integrating AVs into society, and calibrating pedestrians’ trust to the appropriate level. Given that this is an emerging field of study, much still remains unknown regarding the factors and strategies required to calibrate the trust of pedestrians in AVs. More empirical studies are needed in the field of pedestrian-AV trust.

REFERENCES