Table 1: Well-being (1–7) and Trust (8) questionnaire

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1. Positive relationship (me to others): Based on the current interaction, I am content with the relation with other robot.
2. Positive relationship (others to me): Based on the current interaction, I think the delivery robot around me handle others in a positive manner.
3. Satisfaction (positive activation): During my current travel event, I was worried/confident.
4. Satisfaction (positive deactivation): During my current travel event, I was tired/alert.
5. Satisfaction (cognitive evaluation): My current travel event worked poorly/worked well.
6. Well-being: This travel event contributes to my well-being.
7. Trust (in others): Based on the current interaction, I trust robots in my surrounding.
8. Trust (in scooter): Based on the current interaction, I trust my self-driving scooter.

Appendix A – Wellbeing and Trust Questionnaire

To assess user's well-being, we used a modified version of the social well-being questionnaire (Q1–Q7 in Table 1) Radzyk (2014) to make it situational rather than general and more applicable to our study scenario. Our questionnaire was designed to measure well-being based on four factors: (1) positive relationship, (2) satisfaction with travel Friman et al. (2013), (3) trust, and (4) general well-being (see Table 1).

For positive relationship, we included two questions to assess the user's perception of their relationship with others, one asking about their relationship toward others (Q1) and the other is asking about others' relationship toward them (Q2). To measure satisfaction with travel, we selected one question from each of the three factors in the Satisfaction with Travel Scale Friman et al. (2013): positive activation (Q3), positive deactivation (Q4), and cognitive evaluation (Q5). To assess trust as a factor of well-being, we included a question about the user's trust in others (Q7). Additionally, we asked a question specifically related to the user's trust in the self-driving scooter to measure trust independently (Q8). Finally, we included a question to measure the user's overall sense of well-being after each interaction (Q6). To calculate user's well-being, we average over the response values for Q1–Q7, and for user's trust in scooter, we use the response value for Q8. To ensure a more consistent users' understanding of well-being and trust, we defined these concepts during the introduction of the user study to the participants. Moreover, users had access to the definition of different words during the study while answering the questions. However, the study design allowed for individual interpretations of these concepts, acknowledging that capturing this diversity is vital for developing a robust and applicable model.
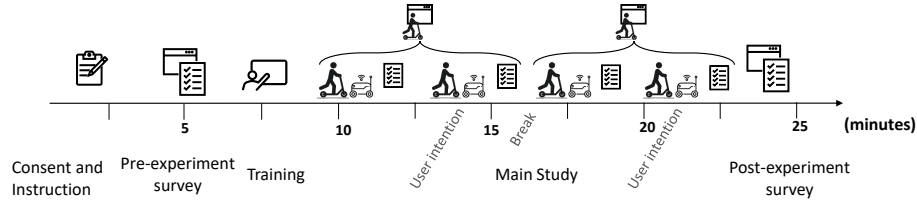
Figure 1: Study procedure overview

Appendix B – Observational Study Procedure

As shown in Figure 1, upon providing consent, each participant is directed to the instructions and the pre-experiment surveys: a positive relationships and well-being questionnaire in a general format. Participants then undergo a 3-minute training session on the web-based driving simulation, which includes an introduction to speed, other sidewalk and road users, how they might interact with delivery robots, sample surveys (which are different from the main study), and a question on intention. Participants also learn how the scooter communicates the situation in a descriptive voice to the user, as well as how to indicate their intent to brake or decelerate using the space bar. Participants are required to complete two rides, each consisting of two-event interaction scenarios. After each interaction event, participants answer questions related to their well-being and trust. The participants expressed their level of agreement or disagreement with the questions using a 7-point Likert scale, ranging from "strongly disagree" to "strongly agree". In the second interaction event of each ride, before they see the scooter's accommodative action toward the robot, they are asked to indicate their preferred action for their self-driving scooter. Note that the actual scooter action is independent of the participant's response. After completing both rides, participants answer questions about their demographic information and previous experience with autonomous features and vehicles. They are then compensated for their participation.

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