The Role of Service Robots in Service Encounters: The Impact of Service Encounter Decisions on Customer Outcomes

A Data Management Plan created using DMPonline.be

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Project abstract:

Purpose: With the service robot market growing much faster than the industrial robot market (Industrial Federation for Robotics 2020), service robots are on the rise. Indeed, when customers interact with firms (i.e., service encounters) in various settings (e.g., hospitality, healthcare, transport), they are increasingly confronted with services robots. Despite its importance, the role that service robots in service encounters can play is still in its infancy. Hence, this proposal is designed to better understand their role (1) in the absence versus presence of human employees, (2) in terms of service robots' communication skills, and (3) in examining humans versus objects as recipients of their service.

Research Design: Using experimental and field-data and different service robots (i.e., embodied robot, chatbot, and drone) a mixed-method approach with quantitative (i.e., structural equation modeling, text mining, single paper meta-analysis) and qualitative (i.e., fuzzy-set qualitative comparative analysis, interviews, observation) methods is proposed to unveil the impact of these service robot roles on customer outcomes (i.e., experience, engagement, and well-being).

Contributions & Relevance: The obtained insights will not only fill the gaps left unexplored in the literature, but our findings will also enable managers, technology developers, and policymakers to make better decisions about the role that service robots can play in order to boost favorable customer outcomes.

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1. Research Data Summary

List and describe all datasets or research materials that you plan to generate/collect or reuse during your research project. For each dataset or data type (observational, experimental etc.), provide a short name & description (sufficient for yourself to know what data it is about), indicate whether the data are newly generated/collected or reused, digital or physical, also indicate the type of the data (the kind of content), its technical format (file extension), and an estimate of the upper limit of the volume of the data.

Dataset Name	Description	New or reused	Digital or Physical	Only for digital data — Digital Data Type	Only for digital data — Digital Data format	Only for digital data — Digital data volume (MB/GB/TB)	Only for physical data — Physical volume
Service robot personality data	Online survey based experimental design: MTurk	• Generate new data	• Digital	• Experimental	• .cvs, .txt	• <100MB	
Metaverse social media data	Tiktok data	• Reuse existing data	• Digital	• Observational	• .cvs, .txt	• <100GB	
Metaverse customer experience data	Anonymized German company data	• Reuse existing data	• Digital	• Observational	• .cvs	• <1GB	

If you reuse existing data, please specify the source, preferably by using a persistent identifier (e.g. DOI, Handle, URL etc.) per dataset or data type:

- Tiktok social meida data (short video of metaverse)
- Anonymized German company have some trails for metaverse

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? Describe these issues in the comment section. Please refer to specific datasets or data types when appropriate.

- No

Will you process personal data? If so, briefly describe the kind of personal data you will use in the comment section. Please refer to specific datasets or data types when appropriate.

- No

Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, …)? If so, please comment per dataset or data type where appropriate.

- No

Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material/Data transfer agreements/ research collaboration agreements)? If so, please explain in the comment section to what data they relate and what restrictions are in place.

- Yes

- Anonymized German company data: The specific negotiation procedures are still in progress. More concrete information may not be available until early next year.

Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain in the comment section to what data they relate and which restrictions will be asserted.

- No

2. Documentation and Metadata

Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable, for yourself and others, now and in the future (e.g., in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, Codebook.tsv etc. where this information is recorded).

- The data will be preserved by the network drive of the KU Leuven OneDrive for Business.
- The name of each document will only contain the information relevant to its content
- A variable list will be provided to describe all the information and formation of the dataset

Will a metadata standard be used to make it easier to find and reuse the data? If so, please specify (where appropriate per dataset or data type) which metadata standard will be used. If not, please specify (where appropriate per dataset or data type) which metadata will be created to make the data easier to find and reuse.

- No

The same as the information presented above.

3. Data storage & back-up during the research project

Where will the data be stored?

- The data will be preserved by the network drive of the KU Leuven OneDrive for Business.
- The data will also be preserved by a hard drive.

How will the data be backed up?

- KU Leuven OneDrive will automatically update.
- Each 2 months, the research team will update the data in the hard drive

Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely.
If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.

- Yes

- KU Leuven OneDrive for Business provides 2000 GB (2 TB) storage, which is far more than the needs for the current research project.

How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

- Security is guaranteed by the multifactor authentication procedure of KU Leuven.
- Only the researchers (PhD, Supervisors) involved in the cooperation (e.g., co-author) have the right to approach the data sets.

What are the expected costs for data storage and backup during the research project? How will these costs be covered?

- The costs for OneDrive for Business are covered by the KU Leuven
- The costs for hard drive will be covered by the FWO PhD Fellowship

4. Data preservation after the end of the research project

Which data will be retained for at least five years (or longer, in agreement with other retention policies that are applicable) after the end of the project? In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).

- The study will strictly follow the principle of preservation of data, and the data will be kept even after the project is finished (i.e., 10 years).
- The persevered data can be used for the replicate test.

Where will these data be archived (stored and curated for the long-term)?

- KU Leuven OneDrive for Business
- Hard drive.

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?

- The costs for OneDrive for Business are covered by the KU Leuven
- The costs for hard drive will be covered by the FWO PhD Fellowship

5. Data sharing and reuse

Will the data (or part of the data) be made available for reuse after/during the project? In the comment section please explain per dataset or data type which data will be made available.

- Other, please specify:

All generated data can be reused, and the research team will make it available upon request.

If access is restricted, please specify who will be able to access the data and under what conditions.

- Data set 1: research team will make it available upon request
- Data set 2: Open for everyone
- Data set 3: Only the researchers (PhD, Supervisors) involved in the cooperation (e.g., co-author) have the right to approach the data sets.

Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)? Please explain in the comment section per dataset or data type where appropriate.

- Yes, Privacy aspects
- Yes, Intellectual Property Rights

- For the third dataset, it is expected that the company will not allow the data to be made publicly available.

Where will the data be made available? If already known, please provide a repository per dataset or data type.

- The data will be accessible through the KU Leuven institutional repository, known as RDR

When will the data be made available?

- After each research project are published in academic journals, the data will be made available

Which data usage licenses are you going to provide? If none, please explain why.

- Currently, the data collection process (e.g., negotiations) with the company is still in progress. Once we have more concrete information, we will determine which data usage licenses to use.

Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, you have the option to provide it in the comment section.

- Yes

What are the expected costs for data sharing? How will these costs be covered?

- NA

6. Responsibilities

Who will manage data documentation and metadata during the research project?

Changxu Li (PhD Candidate)

Who will manage data storage and backup during the research project?

Changxu Li

Who will manage data preservation and sharing?

Bart Larivière (Supervisor); Alexander Edeling (Co-Supervisor)

Who will update and implement this DMP?

Changxu Li; Bart Larivière; Alexander Edeling