van Leeuwen, J.P., Quanjer, A.J., Jylhä, A. 2019 "Envisioning Conversational Agents in Public Spaces – a case of talking lampposts" In: *Beyond Smart Cities Today*, 18-19 September 2019, Rotterdam, The Netherlands.

Envisioning Conversational Agents in Public Spaces – a case of talking lampposts

Jos van Leeuwen*, Arnold Jan Quanjer, Antti Jylhä
The Hague University of Applied Sciences

Beyond the potential of new layers of urban infrastructure – sensor-laden networks, big data, artificial intelligence – to optimize cities functionally, lay promising opportunities to also use these technologies for new forms of social interactions. In an ongoing smart city development project, we explore the potential of distributed conversational speech interfaces in the social context of local urban communities.

Speech interactions are often associated with virtual assistants and smart home devices [3], designed primarily for private contexts. A less developed domain is speech interfaces in public contexts [1]. In our research we explore the potential of speech interfaces in lampposts [2]. With a network of talking lampposts, citizens may find new channels to interact with the municipality – e.g., to report problems in the neighborhood or suggest ideas for city development – and to develop new social initiatives.

Using a rudimentary prototype, we explore and investigate scenarios for dialogues between citizens and lampposts. The dialogues are designed to investigate the boundaries of desirable and acceptable experiences, with progressively more intrusive discourse from the part of the lamppost. Citizens engaging in this experiment are stimulated to envision potential use cases and reflect on privacy issues. This also elicits thoughts on possible consequences in the social context of citizens: some participants were concerned about being perceived as informants by other residents, while others like the lamppost to help find new contacts in the neighborhood.

During the conference, we will engage the audience in live experiments on stage and in subsequent co-design activities with all participants, to uncover challenges, opportunities, and dilemmas for the introduction of speech interactions in public spaces.

REFERENCES

[1] Leigh Clark, Phillip Doyle, Diego Garaialde, Emer Gilmartin, Stephan Schlögl, Jens Edlund, Matthew Aylett, João Cabral, Cosmin Munteanu, and Benjamin Cowan. 2018. The State of Speech in HCI: Trends, Themes and Challenges. *arXiv preprint arXiv:1810.06828*.

[2] Jos P. van Leeuwen, Arnold Jan Quanjer, Antti Jylhä et al. 2018. *Kunstmatige Intelligentie in de Publieke Ruimte in Scheveningen – Projectrapportage*. The Hague: De Haagse Hogeschool (*in Dutch*).

[3] Martin Porcheron, Joel E. Fischer, Stuart Reeves, and Sarah Sharples. 2018. Voice Interfaces in Everyday Life. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (CHI '18). ACM, New York, NY, USA, Paper 640, 12 pages. DOI: https://doi.org/10.1145/3173574.3174214

* Professor of Civic Technology, corresponding author: j.p.vleeuwen@hhs.nl