
Towards a Framework for Probing Future Urban Technologies in Google Street View

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Abstract

In this paper we introduce Street View Fictions, an empirical approach to design fiction which aims to probe and critique near future urban technologies in virtual, yet realistic, urban environments with users. We argue that the large availability of interactive panoramas (e.g. Google Street View) provide the potential to contextualise fictional prototypes in order to elicit users' views on the potential impact of those technologies on their own local communities. We propose an initial framework how to design, implement and employ Street View Fictions, and illustrate those steps along the hypothetical scenario of ubiquitous urban robots.

Author Keywords

Design fiction; qualitative methods; future technology; smart cities; urban robots; Google Street View.

CCS Concepts

•Human-centered computing → Human computer interaction (HCI);

Introduction

With the foreseeable rise of non-human agents in people's everyday lives, for example through robots entering urban spaces [16], design researchers have called for new modes of inquiry to better understand not only the technological but also the socio-cultural and ethical dimensions of those

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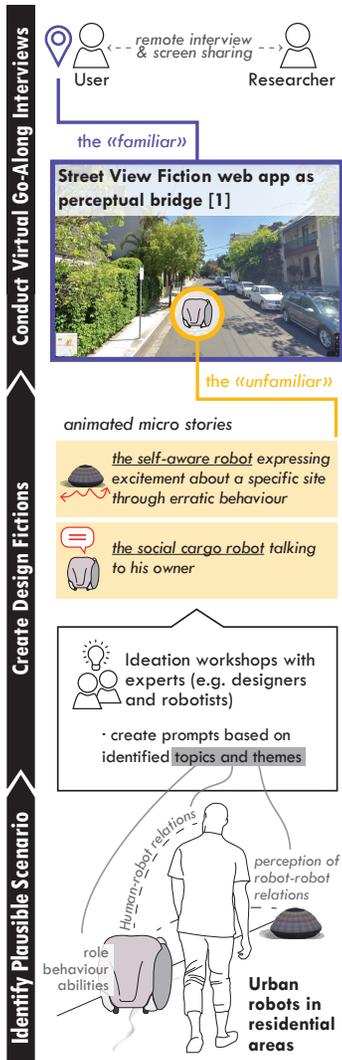


Figure 1: Proposed framework how to design, implement and employ Street View Fictions in order to probe near future technologies (e.g. urban robots) with users.

near future technologies [4]. Design fiction has thereby become a popular method in the broader speculative design and research-through-design discipline. It encompasses the use of “diegetic prototypes” integrated into a fictional story world, in which the interactions with those artefacts become the main driver for the narrative [12]. Design fictions allow designers to pose “what if”-questions in order to probe, explore and critique possible futures enabled through emerging technologies in a discursive space [6]. Having roots in science fiction, videos have been widely used as a medium to create fictional story worlds [18], however approaches have diversified ranging from short stories [3, 16], imaginary academic abstracts and papers [2, 15], technology probes [5, 10] and virtual reality [17].

One aspect which distinguishes design fiction from the science fiction genre is to maintain a sense of reality. Auger refers to this as a “perceptual bridge”, which enables the audience to relate to and engage with the fictional world [1]. This can be achieved through various techniques: Dunne and Raby, for example, designed robotic objects which resemble current furniture design, thus scrutinising the humanoid depictions of robots and instead striving for a seamless integration into the domestic context [5]. In literary design fictions authors can incorporate familiar elements, for example related to the location in which the story is situated in [16]. Cheon and Su propose an empirical approach to design fiction, in which participants craft their own futuristic autobiographies based on a researcher’s prompt, thus eliciting viewpoints and values from individuals [3].

In accordance with the concept of the “perceptual bridge”, in this position paper we propose Street View Fictions, an approach which aims to probe near future urban technologies situated in virtual, yet realistic, urban environments. Building on the large geographical coverage of the service

Google Street View, we suggest that interactive panoramas augmented through virtual technology probes could serve as a scalable design fiction medium, which enables to elicit participants’ views on the potential impact of those technologies on their own local communities. In the following we propose an initial framework how to design, implement and employ Street View Fictions (see Figure 1). We illustrate those steps along the hypothetical scenario, in which mobile service robots have populated urban residential areas and socially interact with humans and other robots.

A Framework towards Street View Fictions

Identify Plausible Scenario

As common in crafting design fictions, the first step involves the selection of a plausible future scenario. As previously outlined the review of academic literature and media reports can serve here as a source of inspiration [16]. Our chosen scenario is motivated by recent reports around the deployment of patrolling robots in urban neighbourhoods, as well as endeavours from the industry to make personal urban robots, such as cargo robots [11], available for the mainstream. This hints at a future in which we will see a rise of social robots not only in the well researched contexts of the domestic home [7] and busy (semi)-public spaces (e.g. airports) [8], but increasingly on the street in residential areas. To unfold some of the socio-contextual complexities that the integration of new technologies can evoke here, this phase also involves brainstorming relevant themes that go beyond the purely functional and product-centric perspective (e.g. considering potential human-robot relations; expected role and behaviour of urban robots).

Create Design Fictions

The next step is to create short prompts that touch on the previously identified themes related to the urban technology. We propose to conduct a series of ideation workshops

with experts (e.g. designers, robotists), using common creativity support tools, such as ideation decks [9], to facilitate the generation of ideas. While the prompts can revolve around a realistic and foreseeable urban robotic application, such as cargo robots, they are less concerned with its primary function, rather than addressing more sensitive and profound questions, such as companionship, relationship with and self-awareness of urban robots. The next step involves the research team to translate these prompts into animated micro stories (see possible examples in Figure 1). Animated micro stories are short sequences to communicate the prompts through visual and/or auditory cues. We are currently planning with the following toolchain: 1) creating 3D models and animations in Blender¹, 2) importing the models into the JavaScript 3D library three.js², which allows then to 3) embed the animated objects into a web app which integrates the Google Maps Api.

Conduct Virtual Go-Along Interviews

The last phase is concerned with the employment of Street View Fictions as an empirical approach to elicit feedback from individuals. Similar to futuristic autobiographies [3], we see Street View Fictions as an augmentation method that can be integrated within existing qualitative data collection and evaluation methods, such as semi-structured interviewing. We propose the conduction of virtual go-along interviews [13] while participants navigate through their local neighbourhood in the Street View Fiction web app. Traditional go-along is an ethnographic research tool “that brings to the foreground some of the transcendent and reflexive aspects of lived experience as grounded in place” [14] by inquiring participants within their familiar (urban) environments. Following this definition, we argue that go-along interviewing complies with the concept of the “perceptual

bridge”: it allows to capture perceptions and interpretations of the fictional probe (“the unfamiliar”) contextualised through the (past) experiences of the participant in his local environment (“the familiar”). While the participant becomes the actor in the fictional story by navigating the virtual environment, the go-along technique enables the researcher to still take a more active role compared to only observing. To unfold rich narratives and discussions, we assume it is crucial that participants are given enough freedom to weave in their own personal stories related to the place, however with the researcher carefully setting the scene and intervening if necessary. This could be achieved through a) giving a clear instruction at the beginning which then also becomes the overarching story line, for example instructing the participant to navigate to a local supermarket for daily grocery shopping, b) triggering specific animated micro stories in the web app to guide the narrative in a certain direction, or c) through the semi-structured interview questions itself.

Discussion & Conclusion

Stories are closely linked to places, and vice versa: ‘places’, either fictional or real, set the scene for a story, and through the story we learn about a place, its inhabitants, its social and cultural context. Revisiting places, in turn, can trigger past experiences and memories that we strongly connect with them and that we might share in the form of oral or written narratives. In this position paper we build on this strong interweaving of places and storytelling, and propose Street View Fictions, a novel design fiction approach which aims to virtually probe near future urban technologies situated in actual places. We argue that Street View Fictions could augment existing qualitative research methods in order to probe, explore and critique near future urban technologies with users in their virtual local environment. Building on the concept of the “perceptual bridge” [1], we hope that integrating diegetic probes into a user’s virtual habi-

¹<https://www.blender.org/>, accessed June 2020

²<https://threejs.org/>, accessed June 2020

tat, can help them to engage with the fictional scenario and elicit rich discussions through the contextualisation.

In our future work we are planning to validate the framework along the here presented hypothetical scenario in an empirical study. Thus, our goal is to create new knowledge about the role that robots might play on a hyper-local scale, such as urban neighbourhoods. At the same time, we aim to provide methodological insights how to use interactive panoramas augmented through virtual urban technology probes as a design fiction medium. In order to make our approach easily applicable for other designers and researchers, we are planning to make the Street View Fiction web app available as a tool. As VR headsets are not ubiquitous in private households yet, at the present stage we are planning with a non-immersive web application in order to reach a wide and diverse range of users. Nevertheless, we think our here presented framework and lessons learnt expected from the study can be equally valuable for designers working with immersive technologies: for example, there might be similar challenges when it comes to the question how to present and illustrate future interfaces and interaction paradigms using visual and auditory means. Further, insights about the efficacy of using real-world locations to set the scene for design fictions and act as a catalyst to elicit feedback from users, could be equally applicable to design fictions in VR environments.

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