

# Robots for people – IN 5510 2021









# Robots remove some tasks and create some new – often of a different kind



## Adapting to a Robot

Adapting Gardening and the Garden to fit a Robot Lawn Mower

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### ABSTRACT

Introducing robots into the home changes the work that the homeowners carry out. This paper explores in depth how garden work and the garden change when a robotic lawn mower is introduced. The methodology in this study is autoethnography, which gives access to personal experiences and thoughts. The paper describes how the usual work of manually mowing the lawn is automated and new tasks emerge as the gardeners adapt to the robot mower. A conceptual framework is presented and used to analyse these changes. Some gardening tasks become redundant and new tasks appear, and a new urgency is added to some of the old tasks. In addition, awareness about the robot mower's movements is important to keep it active and avoid damage to the robot and things in the garden. The paper suggests that unwanted changes that become too demanding are important for user acceptance or rejection of robots in the home environment.

### CCS CONCEPTS

• Human-centered computing • Human computer interaction (HCI) • Empirical studies in HCI

### KEYWORDS

robot mower, adaptation, automation, new tasks, autoethnography

### ACM Reference format

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### 1 Introduction

Previous research has shown that introducing robots into the home changes the work that is carried out by the homeowners [8,10,19,24,25,26]. Forlazi and DiSalvo [9] show that the vacuum cleaning robot Roomba reduced cleaning labour and changed people's cleaning work. Cleaning was traditionally done once a week, but the Roomba can be active every day. The study shows how the physical environment of the home influenced how the Roomba was used, and the inhabitants helped the robot, e.g. by taking clothes from the floor so the Roomba could clean it. The study concludes that the homes and the Roomba needed to adapt to each other. The robot vacuum cleaner was not a replacement of the traditional vacuum cleaner. Cleaning habits and attitudes change to the degree that some personal convictions were found to be not compatible with using a robot to vacuum clean the house [8]. Cleaning robots 'elicit dynamic interactions with physical space, household members, and intended tasks. These relationships are inter-connected and relational to each other' [26, p. 427]. Sung et al. [25, 26] argue for the need for designers to understand robot owners. In this paper, I explore in-depth how the robot lawn mower that I purchased to reduce the lawn mowing work affected our care of the lawn and also other gardening tasks – and us as gardeners. It had consequences for the gardening tasks in such a way that the gardeners over time carried out work that transformed the garden. Many small changes in work tasks added up to a large change of the appearance of the garden and the gardeners' way of thinking about the garden.

A robot mower automates some of the human work of lawn mowing. I use a conceptual framework from a different domain to discuss how automation by a robot removes some tasks and introduces new tasks. To understand how the changes come about from the perspective of the gardeners, an interpretive qualitative research methodology is used [15]. As the gardeners in this study are me and my husband, I use an autoethnographic approach [1,14] that gives access to deeper insights and opens up for personal reflections of how and why the events unfold. Real use of the robot is studied 'in the wild'. The robot mower in this study is

# Chatbots are also robots

- What about people with dyslexia?
- What about people without Norwegian as their first language?
- What about people with short memory issues?
- ...

<p><b>Anna:</b> My name is Anna and I am a chatbot.</p> <p><b>Anna:</b> I am best adapted to answering short questions. Remember to include what type of benefit you are asking about.</p> <p><b>Anna:</b> How can I help you?</p> <p><b>Anna:</b> For English chat, click here (button)</p> <p><b>User:</b> can a young disabled person married to a foreign single mother receive child benefit and child supplement</p> <p><b>Anna:</b> If you are a single mother or father, you may be entitled to extended child benefit if you are living alone with children.</p> <p><b>Anna:</b> The extended child benefit is child benefit for one more child than what you actually are living together with.</p> <p><b>Anna:</b> You have to apply for an extended child benefit, it will not be automatically granted.</p> <ul style="list-style-type: none"><li>• Who is entitled to child benefit? (button)</li></ul> <p>&lt;lists info about extended benefit&gt;</p>	<ul style="list-style-type: none"><li>• When does the right to extended child benefit expire? (button)</li><li>• Apply for extended child benefit (button)</li><li>• Shared child benefit (button)</li></ul> <p><b>User:</b> When does the right to extended child benefit cease? (action)</p> <p><b>Anna:</b> Extended child benefit will cease if:</p> <ul style="list-style-type: none"><li>• You marry</li><li>• You have children with a new cohabitant</li><li>• You have been cohabitant with a person you do not have joint children with for twelve months</li><li>• You move together with the father of the child</li></ul> <p><b>User:</b> can a foreign single mother receive child benefit and child supplement</p> <p><b>Anna:</b> If you are a single mother or father, you may be entitled to extended child benefit if you are living alone with children.</p> <p><b>Anna:</b> &lt;lists criteria for extended benefit&gt;</p> <p><b>User:</b> Payment (action)</p>
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Privatperson

Hei! Jeg heter Frida og er NAV sin chat-robot.

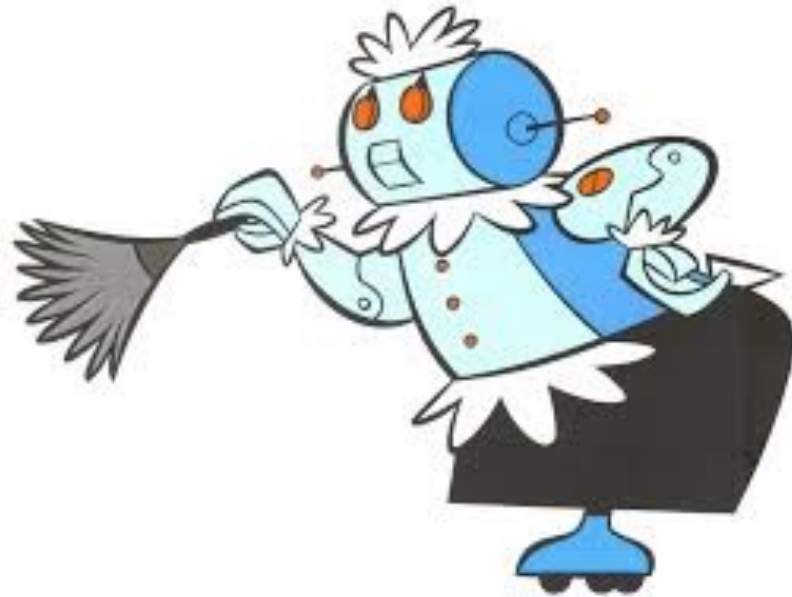
For English, click here

Jeg er lege eller samarbeidspartner

Hva lurer du på?

Still ditt spørsmål 0/110

How can a robot be useful for people?  
Doing what? For whom?



Rosie the Robot Maid, from Jetsons on TV from 1962