UNIVERSITY OF COPENHAGEN
FACULTY OF SCIENCE

Master's Thesis

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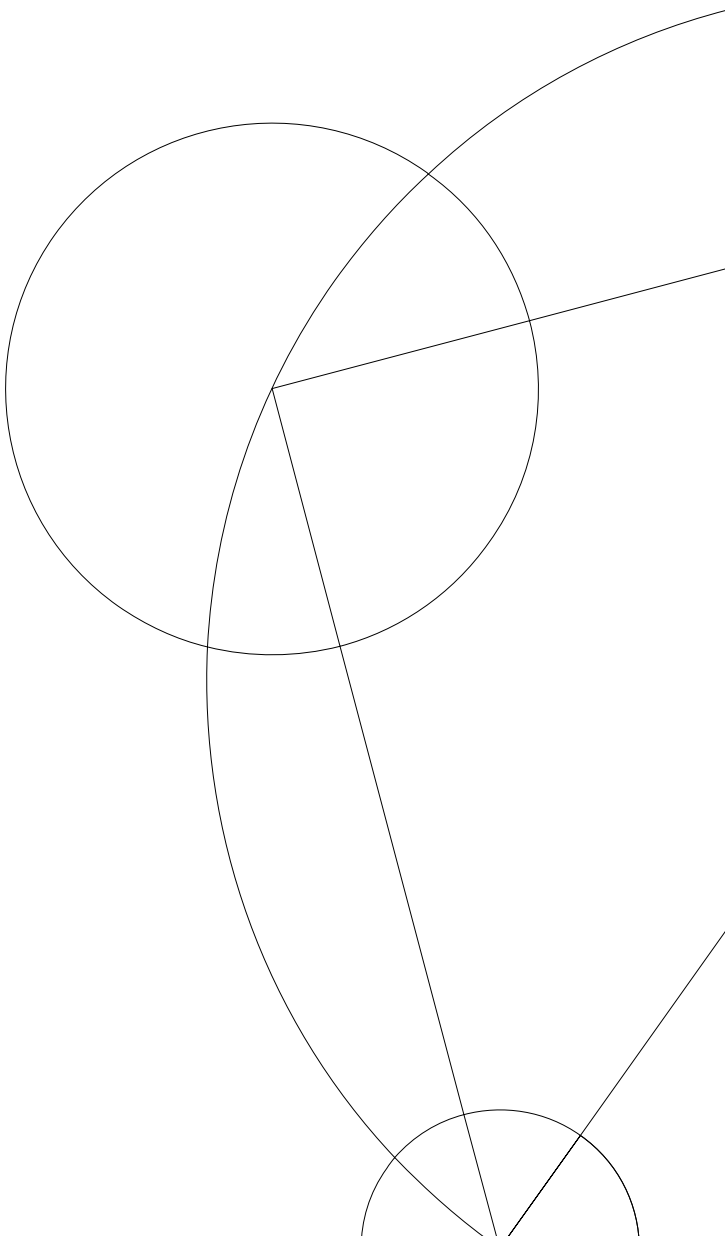
How to prototype?

A study on characteristics and the fidelity of shape-changing interface prototypes



Supervisors: Daniel Ashbrook, Hyunyoung Kim

May 2021

Abstract

Constructing and utilizing prototypes plays an essential role in the advancement of the research field of shape-changing interfaces (SCIs). Currently, not enough work has been done to comprehensively outline the design and focal points of the prototyping procedure. The thesis provides useful insights and recommendations on how to develop better SCI prototypes. This is accomplished by firstly creating six prototypes that revolve around the concept of a height-changing smartwatch and then conducting a study. Sixteen participants volunteered, while quantitative and qualitative data was collected on the fidelity and overall performance of the prototypes, along with how they were perceived by the participants. Afterward, the data from the study were analyzed using different techniques and the results unveiled a number of characteristics that affect the fidelity of the prototypes. The most important of these characteristics are the device's shape-change, the perceived aesthetic value, the movement resolution, the rigidness and the sounds of the prototypes. Additionally, the findings suggest that users cannot accurately estimate the exact extent of a shape-change and supplementary help is required to assist with the estimations, an observation that also arose from the participants feedback which advocated for a height-scale. A significant majority of the participants also claimed that future smartwatches should incorporate shape-change functionalities into their designs despite the fact that most of them were unaware of the existence of SCIs beforehand.

Keywords: shape-changing interfaces, prototype, fidelity, study