# MASTER'S THESIS REVIEW

**Author:**                                   Bc. Vojtěch Gintner

**Thesis Title:**                     **Orientation terminal for visually impaired older adults**

**Thesis Supervisor:**               Ing. Miroslav Macík, Ph.D.

**Thesis Opponent:**                 Ing. Jakub Berka

## Assignment

The assignment of the thesis was to analyze the current outcomes of research focused on the specific target user audience of older adults with vision impairments. On the basis of the analysis outcomes, it was aimed to create a set of prototypes of an orientation system terminal. The interaction method should be adapted to the needs and preferences of the target user audience. Individual prototypes should be evaluated with representatives of the target user audience.

## Technical Manuscript

The thesis is written in proper English; it is structured into eight main chapters. The main content of the thesis is on 89 pages. There are 80 references (most are scientific papers).

The first two chapters represent the introduction into the matter and statement of the previous work performed on the project. The following analysis is comprehensive. It focuses on specific consequences of vision impairments with particular attention on older adults; furthermore, specific orientation and navigation problems are discussed in detail. The analysis is concluded by the statement of other comparable orientation and navigation systems for people with vision impairments.

Chapter four focuses on the design of the orientation terminal, particular attention in on tactile symbols and the interaction method. A user study in the form of a workshop with employees of Home Palata and semi-structured interviews with 21 clients is described at the beginning of this chapter. Statement of non-functional and functional requirements follows. Four design iterations conducted in accordance with user-centered design method [1] and formative evaluation method are described in the remainder of the chapter. All design decisions are clearly described and justified by outcomes of the user research and evaluation. An important outcome is that subtle nuances in the design have a significant effect on the effectivity of the interaction in case of the specific target user audience. Follows a chapter with a description of implementation details of four prototypes with a detailed description of the high-fidelity prototype.

The prototypes created were evaluated with representatives of the target user audience in each iteration. In total, 24 unique clients participated in 26 evaluation sessions; the average age of a participant was almost 85 years. The evaluation strongly supports the fact that the resulting design presents an efficient interaction method for the target user audience.

The manuscript is concluded by a discussion of generalizable insights that stem from the comprehensive evaluation of particular prototypes. Conclusion clearly summarizes how were met the goal of the work and present the future work.

## Implementation

The implementation consists of four prototypes (three low-fidelity prototypes and one high-fidelity prototype). 3D CAD and 3D printing were used for all the prototypes. Moreover, HW prototyping tools (Arduino) and SW development were necessary for the creation of the Hi-Fi prototype.

## Questions

1. Where you see the importance of creating products tailored for such a specific user group as older adults with vision impairments?

Master's thesis of Vojtěch Gintner is extraordinary from several perspectives. As a diploma thesis in the HCI field, it is an example of an excellent application of formative evaluation method to develop an efficient design for a very specific user group. From the scientific perspective, the evaluation procedures were very clear and the evaluation brought generalizable outcomes that can be used by the HCI community. A scientific paper [2] based on the results of the thesis was accepted for presentation at conference Interact 2019 (Core A), Vojtěch Gintner is the first author. I would like to ask the committee to nominate this thesis to an award.

**I assess the thesis with mark A (excellent).**

In Prague, June 11th, 2019

Ing. Miroslav Macík, Ph.D.

## References

[1] DIS, ISO. (2009). 9241-210: 2010. Ergonomics of human system interaction-Part 210: Human-centred design for interactive systems.

[2] V. Gintner, M. Macik, Z. Mikovec. Perception of tactile symbols by visually impaired older adults, accepted to INTERACT 2019.