

**I. IDENTIFICATION DATA**

<b>Thesis name:</b>	<b>Olfactory Cues as a Way to Improve Spatial Orientation of Visually Impaired</b>
<b>Author's name:</b>	<b>Bc. Pavla Křivanová</b>
<b>Type of thesis :</b>	master
<b>Faculty/Institute:</b>	Faculty of Electrical Engineering (FEE)
<b>Department:</b>	Department of Computer Graphics and Interaction
<b>Thesis supervisor:</b>	Ing. Dominika Palivcová
<b>Supervisor's department:</b>	Department of Computer Graphics and Interaction

**II. EVALUATION OF INDIVIDUAL CRITERIA**

<b>Assignment</b>	<b>challenging</b>
<i>Evaluation of thesis difficulty of assignment.</i>	
<p>Although the topic of spatial orientation of the visually impaired has a long tradition in the FEE DCGI HCI research group, usage of olfaction for improvement of interfaces that are helping to acquire and maintain spatial orientation wasn't addressed yet. So far, it was also relatively neglected by the HCI research community worldwide. The topic is novel, and therefore it required a lot of effort to study various research papers. It was also heavy on the user research side, as there was a lot to learn from representatives of the target audience. Finally, the objective was also to design and evaluate the olfactory user interface, which is more challenging than performing similar methods, e.g., on commonly used graphic UI. For the stated reasons, I assess the topic as challenging.</p>	

<b>Satisfaction of assignment</b>	<b>fulfilled</b>
<i>Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.</i>	
The assignment was fulfilled.	

<b>Activity and independence when creating final thesis</b>	<b>A - excellent.</b>
<i>Assess that student had positive approach, time limits were met, conception was regularly consulted and was well prepared for consultations. Assess student's ability to work independently.</i>	
The author actively worked on the topic for almost two years and regularly consulted the progress, which contributed to the great scientific quality of the thesis. Mrs. Křivanová came proactively with ideas and never missed any deadline.	

<b>Technical level</b>	<b>A - excellent.</b>
<i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	
<p>It's without any doubt that the thesis is of excellent quality. The author firstly describes learnings about the target user audience gained in two user-research studies. Both studies are well-designed and broadly scoped, as more than 39 sessions were conducted. The author also performed a great analysis of topics that are core to understanding the problem and the domain – analysis of olfaction, the spatial orientation of visually impaired, and finally, both topics combined in the analysis of usage of olfaction in spatial orientation. Overall, Mrs. Křivanová correctly connects her statements with more than 20 scientific publications.</p> <p>Based on the analysis, the author defined requirements for the UI and proposed three possible designs; then chose the most suitable design for further exploration and evaluation. In the evaluation, the author has proven the ability to conduct demanding field experiments and reported both immediate effects of the UI and effects from the perspective of long-term memory.</p> <p>Finally, the author presented a design of web UI where she sums up all the essential learnings from the thesis into a form that is easy to access and understand. Again, even the website design follows good practices of User-centered design.</p>	

**Formal and language level, scope of thesis****A - excellent.**

*Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.*

The thesis is well-structured and written in very good English. The content is described on 80 pages and appropriately illustrated by correctly annotated figures.

**Selection of sources, citation correctness****A - excellent.**

*Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.*

The author uses various sources and states citations correctly.

**Additional commentary and evaluation**

*Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.*

### III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

*Summarize thesis aspects that swayed your final evaluation.*

The author showed deep interest in the topic and demonstrated a remarkable ability to grasp demanding issues, correctly apply principles of human-centered design, and maintain scientific quality while giving the learnings back in easily understandable form even to a broad audience of designers. The careful design and description of user studies make this thesis a valuable source of information about the spatial orientation of the visually impaired and about using olfaction in UI design for the visually impaired in general. The work of Mrs. Křivanová is extraordinary, it exceeds comparable works in extent, and it has a great potential to be beneficial for the HCI community.

**Questions for defense:**

- One of the most significant issues connected to the usage of odors was that participants didn't find them reliable and didn't know that the present scent is a part of some user interface. How would you solve this issue, e.g., in the case of the concept that you tested?

I evaluate handed thesis with classification grade **A - excellent**.

Date: **14.1.2022**

Signature: