Report 1 **Francisco Maria Calisto**
Prof. Dr. Jacinto Nascimento Date: 12/03/2018
Prof. Dr. Nuno Nunes

1 Problem Statement

The hereby **Report 1** will state a first essay for literature knowledge that might support our research. We evaluate several research work. Works from (i) **Volume Segmentation**; (ii) **Labeling Images**; (iii) **Interactive Machine Learning**; and (iv) **Rapid Serial Visual Presentation (RSVP)**. The following sections will explain each work.

2 Investigation/Research

In this section we describe our investigation and research over the proposal readings. Investigation throughout the examination of the reading facts, novel possibilities and results. Also, addressing the research reasoned conclusions of those readings.

2.1 RSVP

Rapid Serial Visual Presentation (RSVP) is frequently used as an experimental model to examine the temporal characteristics of attention. A work done by Brown at al. [1] states a riffling the pages of a book using these techniques. By using a set of images per second, showing evidence of an often possible successful search.

The authors tested a comparable RSVP designs in two different illusions, a "Deep-Flat" visual illusion and a 2D Flat plane. Both, ascertain the relative effects of 2D and 3D under precisely controlled conditions as style presentation. Moreover, in this study, an elicited data includes the performance measures, user preferences and opinions of the participants. At the end, the authors established an effectiveness RSVP by using the two illusions.

This work could be important to us since it shows different 'modes' of RSVP as a rapid sequential presentation that could be applied to the visualisation of our medical images. Therefore, Medical Imaging, and more specifically our system, can take advantage of this RSVP 'modes', since it can be especially helpful if, after the appearance of several DICOM [3, 4] series with a set of instances (each) from various studies belonging to one patient, it can remain in view to allow the radiologist to confirm that a desired instance as been found.

For the experimental procedure the authors had a total of 25 participants showing them a list of five possible categories. All participants did an on-screen questionnaire ate the end of each sequence presentation. The purpose of this questionnaires was to elicit aspects of participants' overall experience. These questionnaires were answer on a five point Likert scale. Moreover, participants were asked at the end about fatigue and preference between the different interfaces. For the results and analysis, the authors the Kruskal-Wallis rank sum test [5] to understand the significance of the comparable conditions. Where if a comparison result is taken as representative, researchers should employ perspective cues with caution. Finally, for a user opinion study, the authors used the Wilcoxon test [7], a pairwise ANOVA [2], to indicate design combinations and to found statistical significance under user opinions.

At the end, the authors concluded that performance was not significantly affected by the illusion of depth, when tested under directly comparable conditions. However, the inclusion of a certain background cues can have a significantly detrimental effect on performance. That said, it is important to take conclusions into consideration for our work. While medical images have typically a black background and are surrounded by the viewport tools and features. Also typically black. Changes of the design could, in fact, rise to significant improvement in recognition performance. There is evidence that combinations of visual depth cues substantially and significantly reinforces the visual effect. Based on this evidence, authors encourage the exploration of a larger design alternatives and applications to further research of the effects of these alternatives. Therefore, it is an interesting proposal to test several alternatives on a Medical Imaging application by testing task performance and radiologist's workflow changes.

2.2 Labeling Images

At *Labeling Images with a Computer Game* paper, Luis von Ahn et al. [6] introduces a new interacting system that can be used to create valuable output. The idea of the authors is to put people playing a game that will help determine the contents of the images by providing meaningful labels for them. Their system makes a significant contribution to us since its valuable output of generated dataset and the way it addresses the image-labelling problem. As we also need to 'label' (annotations) each medical image. Authors encourage people to do the work by entertaining them, while having their desire as an advantage, rather than using Computer Vision (CV) techniques. The last ones, do not work well enough.

This game and the authors work are both a novel interactive system that allows people to label images while enjoying themselves. The authors have showed evidence that people will play their game and that the labels it produces are meaningful. The hereby work, can be complementary to our work since it shows a way to motivate users to label several images. A similar task and goal that we have in our work. In our work we have radiologists as users. As many as we can have, and as more expert they are, better and larger dataset we will have. Having proper annotations associated to each medical image on a more scalable environment, like the web, will give us the advantage of having more radiologists at the same time. Also having international experts on radiology. It will allow the system to have a more accurate dataset, with a more accurate on severe cases, improving the diagnostic assistance supported by automatic system.

3 Final Evaluation

References

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