USING GRAPHICS TO ASSESS WELLBEING IN A CONVERSATIONAL USER INTERFACE

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1 INTRODUCTION

COVID-19 pandemic impacting mental health on a worldwide level. Call for a **means to assess wellbeing,** with Conversational User Interfaces (CUIs) proving promising

"My Wellness Check" by TU Delft, a product service designed for wellbeing assessment. **Survey** with **questions** distributed to **students** for their assessment

Scalability becoming an issue due to cumbersome **manual analysis** of responses by researchers. Taxing procedure for participants with **user engagement** being a problem due to the **length** and **monotorny** of the survey

A need to **automate** wellbeing assessment to **reduce manual processing** of participant input. Additionally a means to **increase user experience,** yielding higher quality data resulting into better wellbeing assessment

2 RESEARCH QUESTION

How might graphics be used to assess wellbeing in a CUI

- What are possible graphical solutions to assess wellbeing?
- How can a graphical modality be interpreted?
- How can the solution improve user-engagement?

3 METHODOLOGY

Prototype application instructing participant through the process. The app acting as the **interface** for the participant with the classification system. The participant **draws** in the environment of the application and then the calculated **results** are presented to them

Literature Research
Wellbeing assessment methods using a graphical medium
- Handwritting
- Drawing

Projective testing techniques
- House-Tree-Person Test (HTP)
- Thematic Apperception Test (TAT)

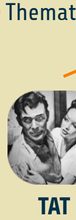


Image classifier for house, tree and person drawings that assigns the **correct label** from each element's subset

Adaptation of the HTP Test to be used with a CUI
- Simplify drawing
- Shorten duration
- Digital administration

Obtain labeled samples of images for training the classifiers. Samples having features based on simplification of HTP interpretation

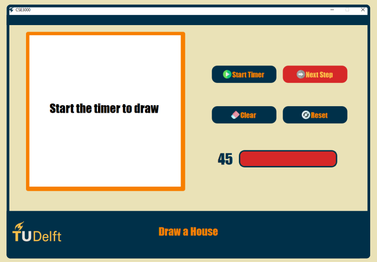
Simplified interpretation manuals, result in a **subdivision** for each element of the test; house, tree, or person correlated to a subset of personality traits, feelings, mood.

4 RESULTS

MODEL	ACCURACY	DATASET SIZE
House	96.91%	538
Tree	99.38%	514
Person	100.0%	542
Average	98.76%	1594

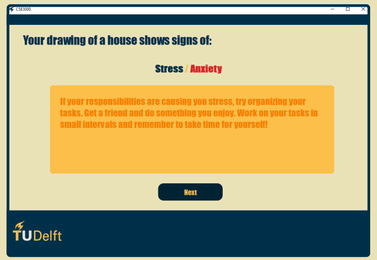
Each model is able to classify images into 1 out of 3 possible labels depending on absence/presence of features

All the models with very high accuracy, all datasets had a 80%-20% random split used for training and validation respectively



The application guides the participant through the process of drawing the 3 elements of the test without indication on how they should look like

The input screen provides basic controls and shows the remaining time available for drawing



After completing 3 drawings the models begin classifying the images

A result screen appears that shows an indication of the participant's feelings or personality, based on the images they drew

A sentence in the form of the suggestion by a fellow student appears below on how the participant could take action to improve the state of their wellbeing

5 CONCLUSION

- The assessment is not a diagnosis, it assists individuals take action to improve their wellbeing through suggestions.
- The performance of the classifiers and the usability of the application are indicators that this is a feasible approach to a graphical solution for wellbeing assessment
- Short duration (135 seconds) compared to traditional question based survey, combined with the drawing aspect of the test, the system poses a worthwhile solution to improve user-retainment
- Steps towards better user experience and increased awareness of personal wellbeing

References:
- Icons from: https://www.flaticon.com
- TAT Image: Murray, H. A. (1943). Thematic apperception test. Harvard University Press.
- My Wellness Check: https://www.mywellnesscheck.org