User-centered responsive user interface for fostering stress awareness

Implementation & Evaluation of Stila web portal

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Agenda

1. Vision

2. Conception
   2.1 User-centered design
   2.2 Main goals
   2.3 Navigation

3. Implementation

4. Evaluation

5. Future Work

6. System Demo
Vision

Improving academic life by fostering stress awareness

- user-centered design
- data visualization
- user feedback regarding computed stress
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User-centered design process model

- First evaluation cycle → paper prototype
- Second evaluation cycle → field study
Main goals

- B. Shneiderman's visual information seeking mantra [2]:
  ```Overview first, zoom and filter, then details-on-demand```
- Simplified structure
- Intuitive navigation
- Responsive design
Navigation of views

Login

Dashboard

Admin

Details

Activities

Logout
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Implementation

Start page (before redesign)
Implementation

Start page (after redesign)
Implementation

Navigation bar

- before redesign

- after redesign
Implementation

Dashboard (before redesign)
Implementation

Dashboard (after redesign)
Implementation

Detail view

before redesign

after redesign
Implementation

User authorization (Admin view)

Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
<th>Feeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDYING</td>
<td>May 4, 2018, 10:40 AM - May 4, 2018, 12:41 PM</td>
<td>🤖️</td>
</tr>
</tbody>
</table>
Data visualization

Dashboard

- Weekly stress level
- Today's stress level
- Monthly aggregated feelings
- Monthly aggregated activities

Detail view

- Computed stress
- Heart rate
- Heart rate variability
- Feature chart
Responsive Design

Source: http://ami.responsive design.is
Summary of important changes

1. consistent layout
2. reduction of highly saturated colors
3. grid/ flex layout
4. easy and intuitive navigation
5. focus on important functionalities (hierarchical structure)
6. info toolbars/ hints for users
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Approach of evaluation

Field study
- 9 participants (aged 22 – 36 & 61), 8 days
- enrolled in Informatics MSc / PhD
- questionnaire containing 14 questions

Categories of interest:
- navigation through website
- comprehensibility of charts
- personal attitude towards stress
- role of Stila regarding stress awareness
Results

Navigation

How was it for you to carry out following tasks? [3]

1 = very easy
2 = easy
3 = okay
4 = difficult
5 = very difficult
6 = don't know
Results

Comprehensibility

Was it clear for you to interpret the data visualization? [3]

1 = very easy *
2 = easy *
3 = okay *
4 = difficult *
5 = very difficult *
6 = don't know *
*to understand
Results

Personal stress level

How helpful were the charts to understand your stress level?

1 = least helpful
5 = very helpful
6 = don't know

Weekly stress
Daily stress
Computed stress
Heart rate
Heart rate variability
Feature chart
Timeline
Results

Stress awareness

Do you often feel stressed?  
- Yes: 44.4% 
- No: 55.6%

Do you think stress is bad for your life?  
- Yes: 88.9% 
- No: 11.1%

Does Stila web portal help you to perceive your stress?  
- Yes: 33.3% 
- No: 66.7%
Evaluation

Users' suggestions:

- ``It is somehow confusing, which type of chart is opening or is it opening or where is it opening.``
- ``A short legend for the used colors would be nice.``
- ``[A] short information about the meaning of the charts would help a lot. The actual tooltips don't provide any good information.``
- ``diagrams should be scaled down on mobile device``

Users' compliments:

- ``I really like the look and feel of the portal and the graphs that you are using for showing Heart Rate etc. are super nice!``
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Future Work

- Improving display of Highcharts
- Detailed explanation for charts
- Improving Feedback functionality
- Accessible aggregated data of all users (anonymized) e.g. for start page
- Grouping of activities similar to mobile application
Quellen

• [4] https://docs.google.com/forms/d/1vsh6DiXWH32QfaC0jefAziU-m_Zhdhy-Awz6-fwHB3A0/edit#responses
• Screenshots on pages 8, 10-17: https://stila.pms.ifi.lmu.de