

How to build a Social Computer Seminar

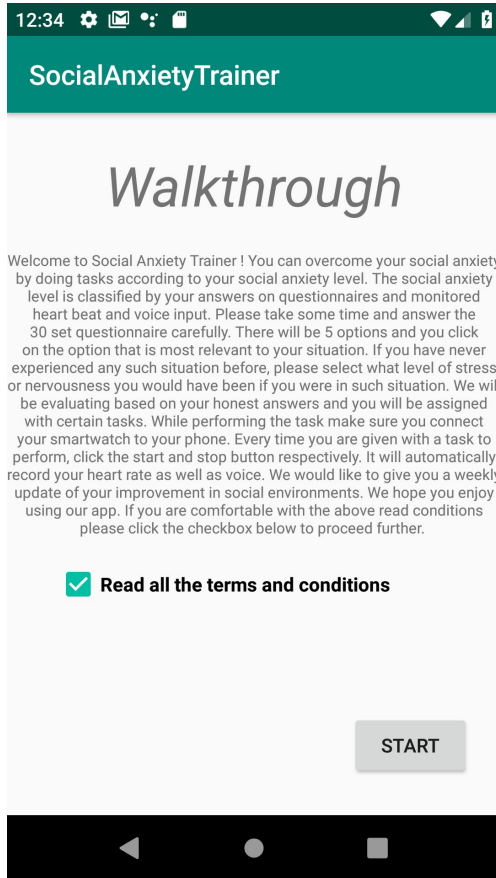
- Presentation 2 -
Social Anxiety Trainer

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Progress - Overview

1. Initial questionnaire
2. Created and evaluated tasks
3. Included heart rate from Microsoft Band
4. Classification of current anxiety level based on voice



Initial Questionnaire

- Appears when using the app the first time
- Terms and conditions before start
- Why? Understand...
 - that honesty is key
 - how to answer the questionnaire
 - how the app works
 - what is monitored
- Important for the user to feel comfortable
- Necessary for the app to work correctly
- Avoid overstraining
 - well-being of user is priority

Initial Questionnaire

- SOCIAL ANXIETY QUESTIONNAIRE FOR ADULTS (SAQ) (Caballo, Salazar, Arias, Irurtia, Calderero, & CISO-A Research Team, 2010)
- Answer before and after using the app → show progress
- Scores in five categories
 - Talking with Strangers
 - Speaking in public/Talking with people in authority
 - Interactions with the opposite sex
 - Criticism and embarrassment
 - Expression of annoyance, disgust or displeasure

12:18

Questionnaire

Question: 1/30

1. Greeting someone and being ignored

☐ Not at all or very slight

☐ Slight

☐ Moderate

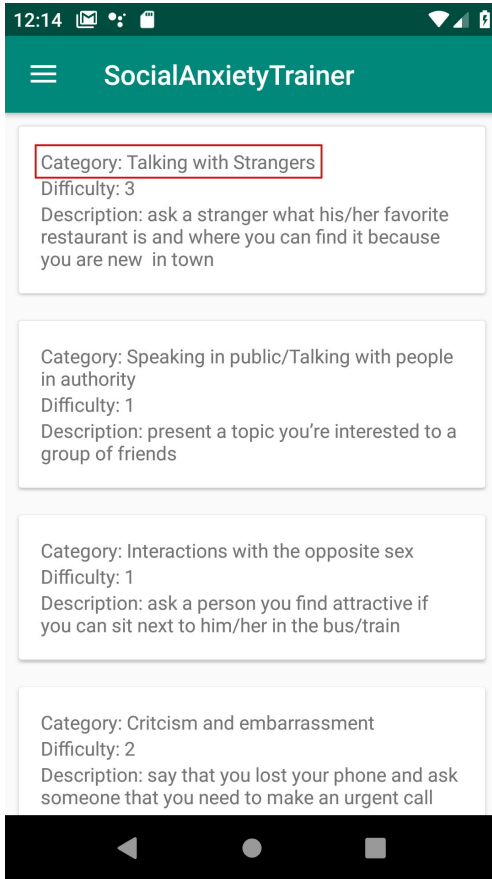
☒ High

☐ Extremely High

CONFIRM

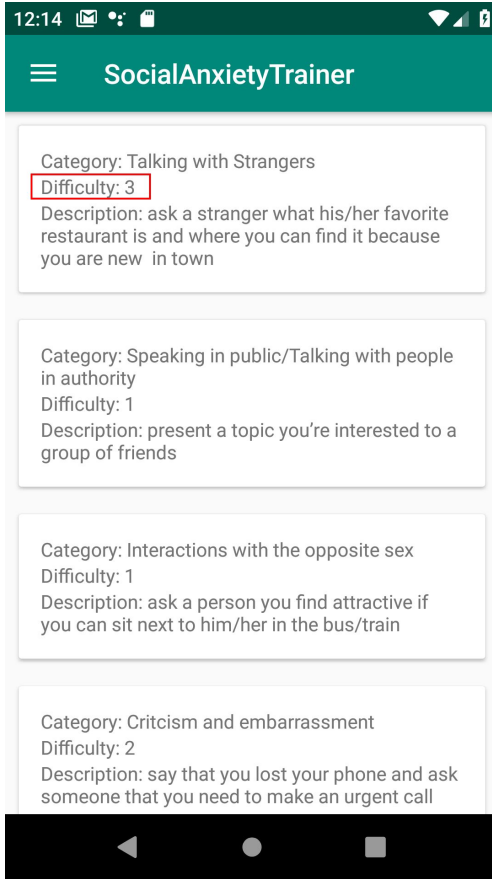
Initial Questionnaire

- Questions belong to different categories
- Sum up scores
- Cut-off values to determine levels of anxiety
- Different levels in different categories
- Low, moderate and high anxiety
- High anxiety means low skill level
 - → low anxiety = skill level 3, moderate = 2, high = 1



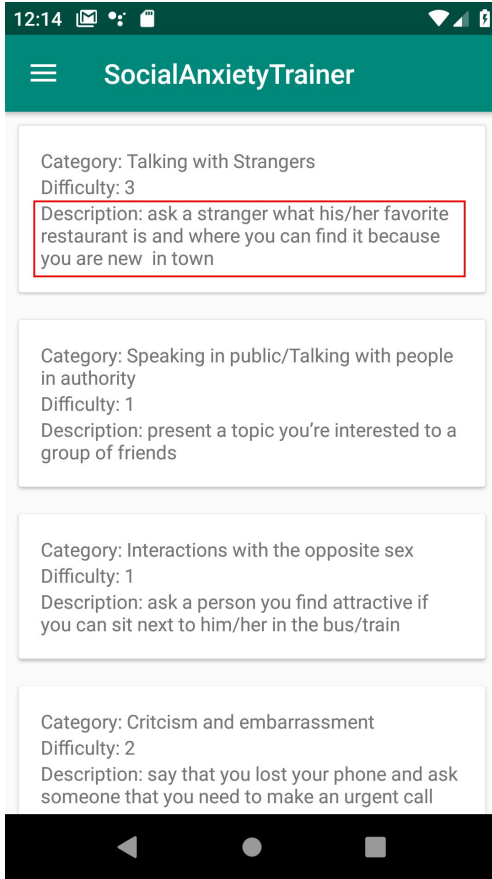
Tasks

- Divided by the same five categories as were used in the questionnaire



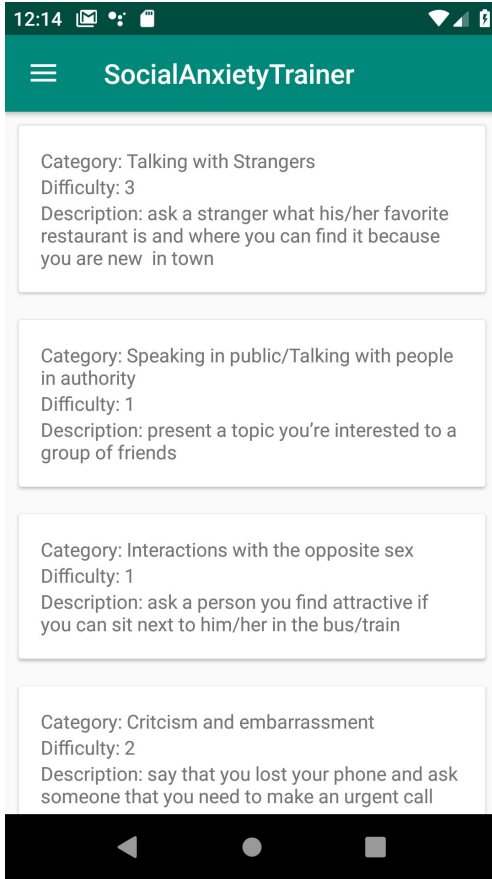
Tasks

- Difficulty levels:
 - from 1 to 3
 - questionnaire + performance in tasks so far determine levels
 - each category level is independent from the other categories
 - successful accomplishments → level up
 - incomplete task → level down
 - give the motivation to finish tasks



Tasks

- Description
 - short
 - easy to understand
 - easy to see the purpose of the concrete task



Tasks

- Choice of tasks:
 - one task for each category chosen randomly
 - tasks fit user's level of anxiety
 - user can decide the category, but not the task
 - out of comfort zone (random selection from system, what task is given)
 - if a task is not finished, it will appear again

Pilot Study - Tasks

- We created tasks and randomized them in a questionnaire
- n=21
- Participants should rate the tasks (1-3) according to difficulty level those tasks belong

→ Evaluation: we calculated the mean values for each item → depending on the results we divided the tasks into the difficulty levels

Please rate the following tasks from 1 to 3 (1 = slightly uncomfortable, 2 = moderately uncomfortable, 3 = very uncomfortable)

Mark your answer red or cross it out. The questionnaire has 2 pages.

Please rate all the items and do so honestly; do not worry about your answer because there are no right or wrong ones. Thank you very much for your participation!

Task	Rating		
Make eye contact with a person you would like to talk to	1	2	3
Ask a police officer about the way/ where you can park for free	1	2	3
Ask a stranger what the current time is	1	2	3
Dance funny at a party	1	2	3
Compliment a person you find attractive	1	2	3
Enforce your opinion in a project or a meeting	1	2	3
Ask an employee at a store for a discount	1	2	3
Visit the cinema on your own	1	2	3
Make a bad joke	1	2	3
Give honest feedback if someone asks you for your opinion on something	1	2	3
Smile at an attractive stranger on the street	1	2	3
Ask somebody to take a picture of you in front of a sight (or a building of your choice)	1	2	3
Make eye contact with a person you find attractive	1	2	3

Pilot Study - Results

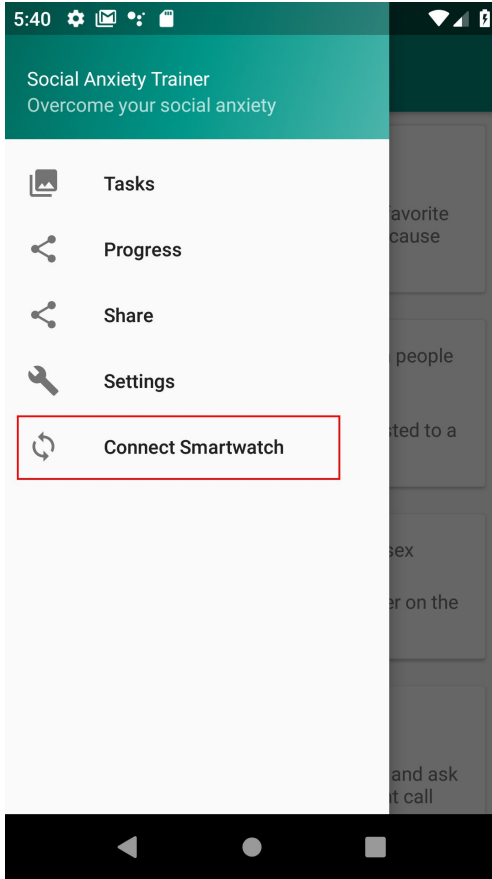
- we looked at the mean value for each item
 - almost all Items were rated 1 or 2 (only 2 were rated 3)
- but the population was not our targeted population (people with mild social anxiety)
- adjustments

Deskriptive Statistik			
	N	Mittelwert	Level
Make eye contact with a person you would like to talk to	21	1,3333	1
Ask a police officer about the way/ where you can park for free	21	1,5238	2
Ask a stranger what the current time is	21	1,2381	1
Dance funny at a party	21	1,6190	2
Compliment a person you find attractive	21	1,8571	2
Enforce your opinion in a project or a meeting	21	1,7619	2
Ask an employee at a store for a discount	21	1,8571	2
Visit the cinema on your own	21	1,7619	2
Make a bad joke	21	1,6667	2
Give honest feedback if someone asks you for your opinion on something	21	1,5238	2
Smile at an attractive stranger on the street	21	1,4286	1

Include heart rate

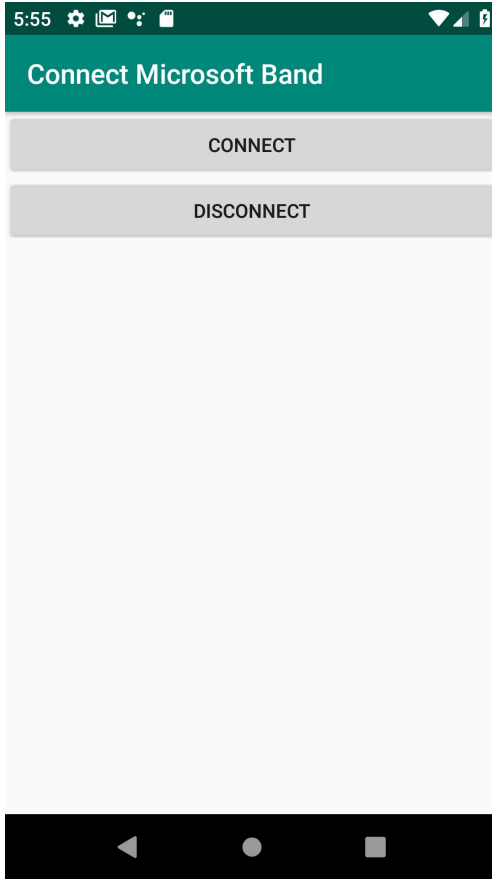
- Hardware: Microsoft Band 2
- Tracks heart rate
- Microsoft Health App needs to be installed on the phone
- Connection via bluetooth
- Microsoft Band SDK needs to be added to the project





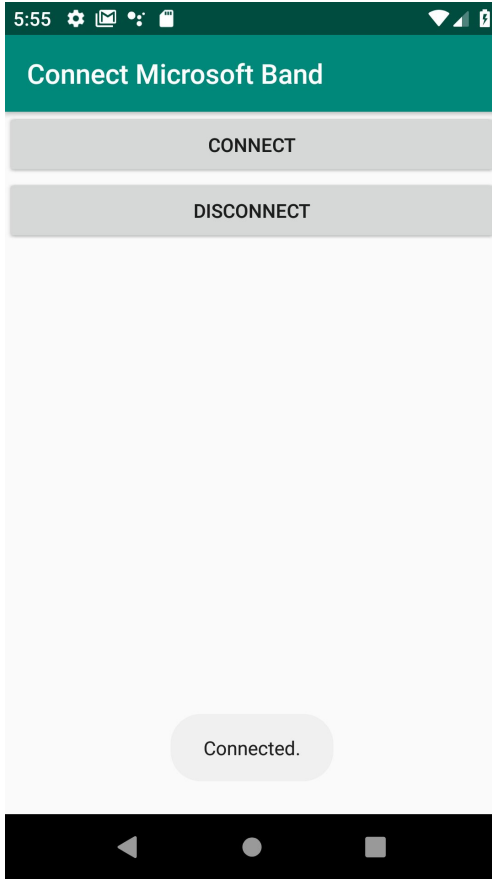
Connect Microsoft Band

- Item in navigation menu



Connect Microsoft Band

- Item in Navigation menu
- Simple UI

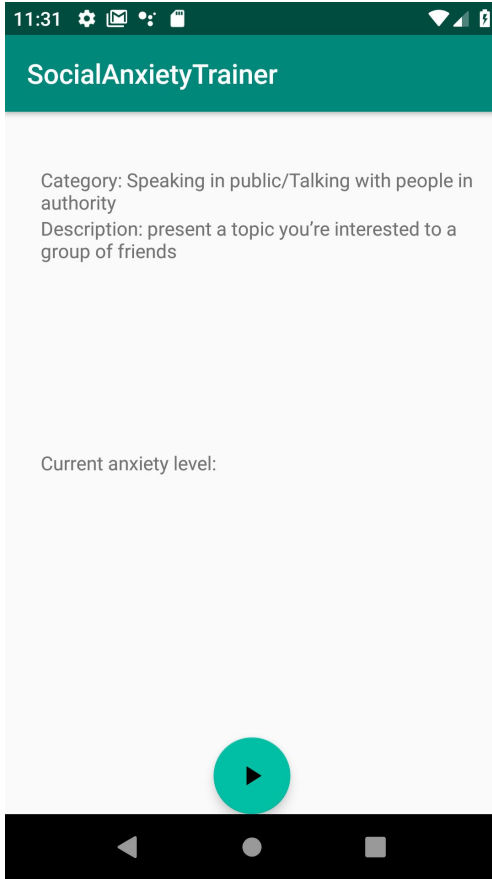


Connect Microsoft Band

- Item in Navigation menu
- Simple UI
- Feedback if setup is successful
- Transfers heart rate to phone until disconnected
- Later input for anxiety classifier

Classification of Anxiety Level

- Voice classification in real-time
- Used software:
 - Social Signal Processing for Android framework (SSJ)
 - EmoVoice plugin (Naive Bayes Classifier)
- Output:
 - valence (Float)
 - arousal (Float)
- Values are input for the anxiety classifier
- Other input values (heart rate, user feedback) will follow soon
- Anxiety levels: None, Low, Mild, High

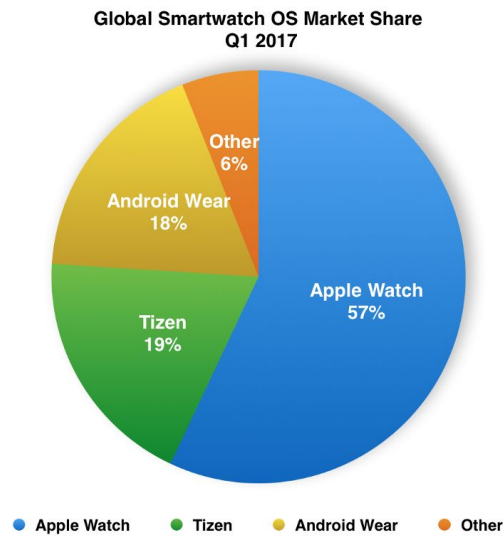


Classification of Anxiety Level

- Task category and description always visible
- Anxiety level visible
 - general feedback
 - feedback is necessary
- What we don't show:
 - level
 - heart rate
 - valence/arousal values
- Avoid explicit data that might increase anxiety

Problems

- No Emulator for Microsoft Band compatible with Android Studio
 - heart rate simulator for development necessary
 - needs to be deleted in the final app
- App only works when Microsoft Health App is installed
- Microsoft Band is not a very popular smart watch → limited usage
- Band SDK no longer available via microsoft
 - Internet Archive Wayback Machine



Problems

- openSMILE was not possible to include in the Android app
 - not maintained since 2016
 - requires outdated development kits
 - needed even to modify the C++ code to compile it successfully
 - ...
- EmoVoice's classifier seems to be not accurate
 - valence and arousal values are increased when it is totally silent

Future Planning

- Feed the classifier with all component outputs:
 - heart rate (weighting: 40%)
 - voice (weighting: 30%)
 - User comfortableness (weighting: 30%)
- Improve the classifier
 - Experiment with different parameters (weighting, threshold values, ...)
- Tutorial (UI needs to be final)
- Add support for other smartwatch devices

Future Planning

- Pictures for tasks
 - appealing UI motivates
- Reward system - how to motivate users?
 - coins
 - achievements
 - smiley feedback
- Reminder function
- Export function for therapist

Future Planning

- Social component
 - support from others
 - exchange
 - share achievements
- Community for app users is a project on its own
 - a lot of effort to implement/setup
 - **but:** very important aspect for motivation

Future Planning

- Show progress
 - heart rate, voice, comfortableness in one graph (+mean value)
 - mean value is expected to go down with practise
visible decrease of anxiety level

Discussion

- How to show the progress?
 - during task? After? Both?
 - different graphs for different categories?
- How to level up and level down
 - how easy to gain a level?
 - how many incomplete tasks before losing a level?
 - too easy and too difficult both reduce motivation
- Should the difficulty level be visible?
 - how might it affect the user?

Thank you for your attention!

Questions?



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