Master Thesis

Text Input System for a Sensitive Data Glove with Haptic Feedback

by Adam Brunnmeier

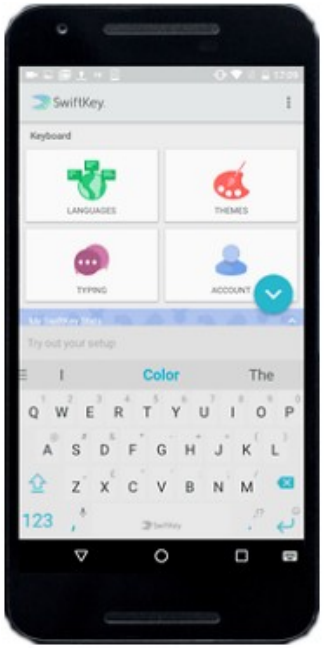
Outline

- Context
- Requirements
- Related
- Glove
- Alphabet & Input Space
- Video
- Evaluation
- Conclusion
- Sources

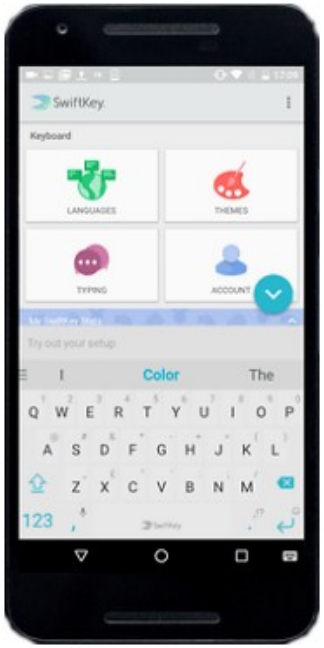
Context

Context

Context


SwiftKey
Keyboard
LANGUAGES
THEMES
TYPING
ACCOUNT
Try out your setup
I
Color
The
Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M
123

Context


SwiftKey
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Color
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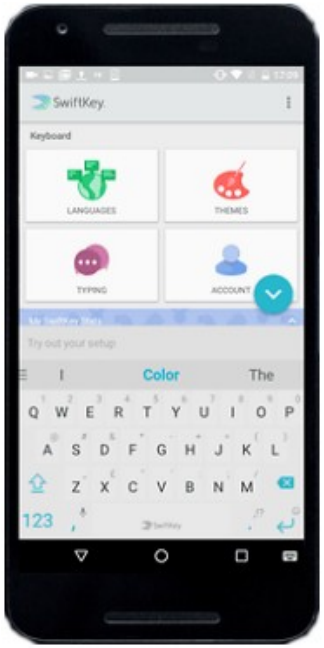
Done

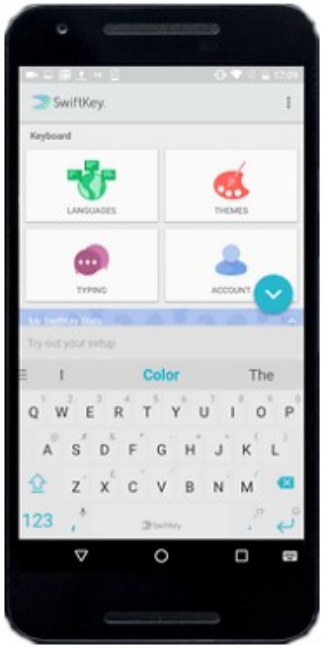
Context

- Performance



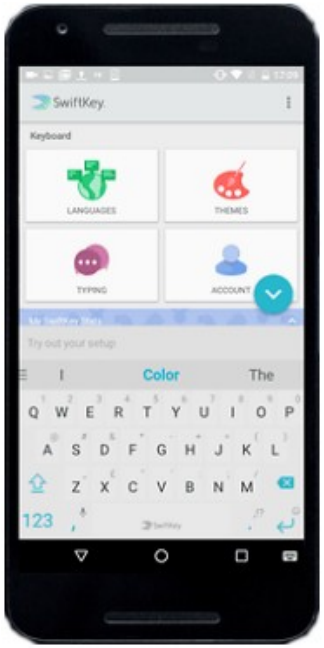
Context

- Performance
- Display area



Context

- Performance
- Display area
- Split attention



Requirements

Requirements

- high performance

Requirements

- high performance
- little strain

Requirements

- high performance
- little strain
- mobile

Requirements

- high performance
- little strain
- mobile

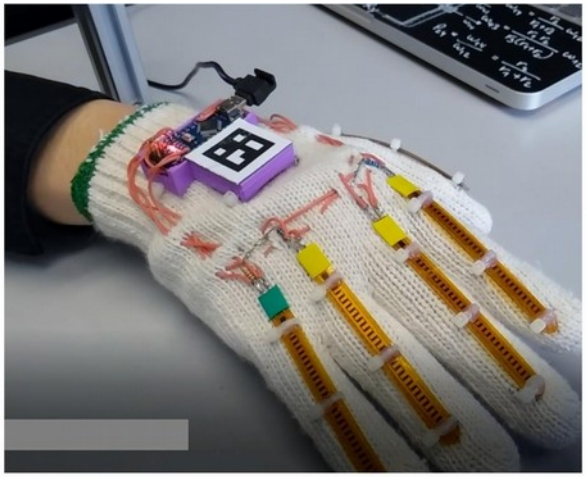
Requirements

- high performance
- little strain
- mobile
- tactile

Related

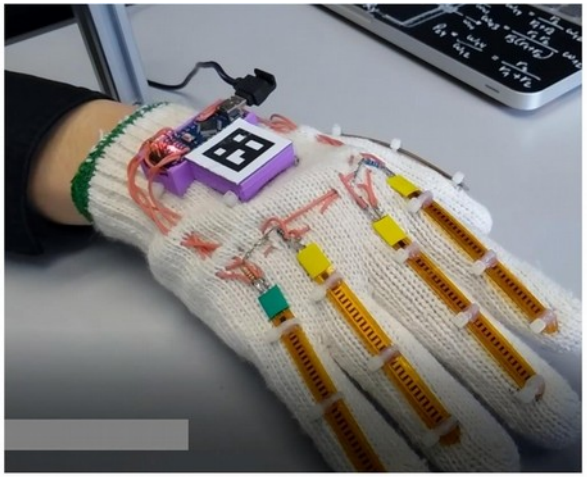
Related

Related



Related

- sign language with up to 250 expressions [LO98]



Glove

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- student startup Cynteract GmbH

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- 11 inertial measurement units

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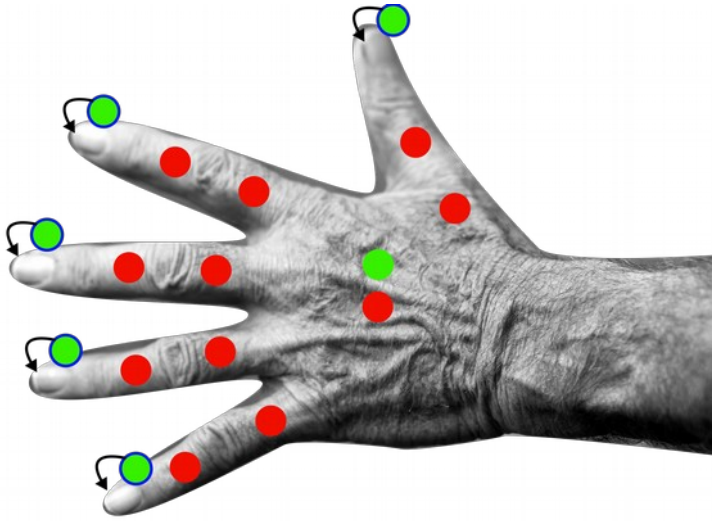
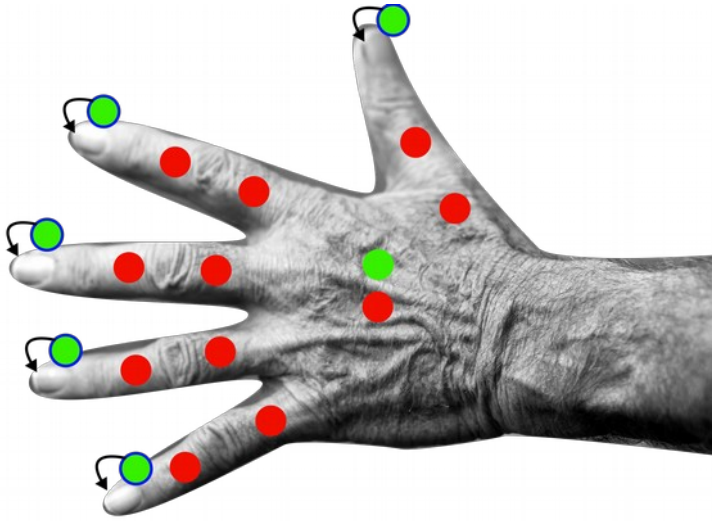


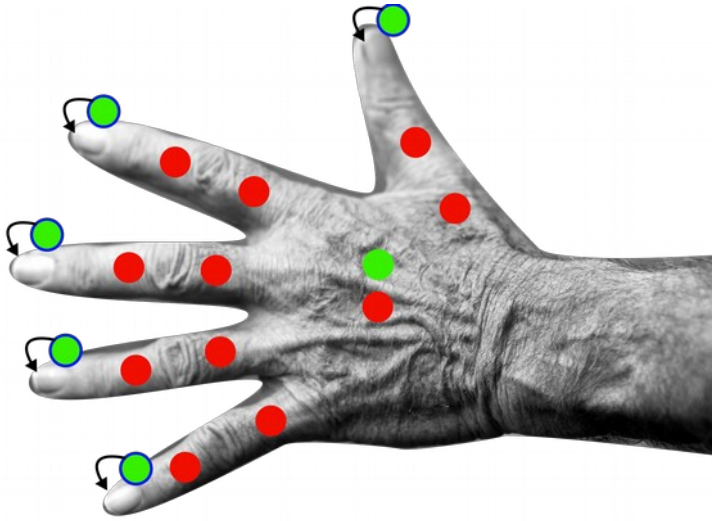
Glove

- student startup Cynteract GmbH
- 11 inertial measurement units
- 5 force sensors



Glove

- student startup Cynteract GmbH
- 11 inertial measurement units
- 5 force sensors
- 6 linear resonant actuators (vibration)



Alphabet

Alphabet

- letters + case + modifier layers : 300

Alphabet

- letters + case + modifier layers : 300
- ASCII complete : 50

Alphabet

- letters + case + modifier layers : 300
- ASCII complete : 50
- navigation keys + modifiers : 120

Alphabet

- letters + case + modifier layers : 300
- ASCII complete : 50
- navigation keys + modifiers : 120
- control symbols : 30

Input Space

Input Space

- total 500

Input Space

- total 500
- a fraction if split to modes

Input Space (2)

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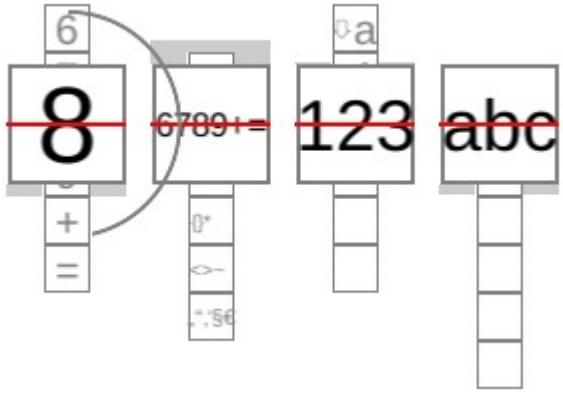
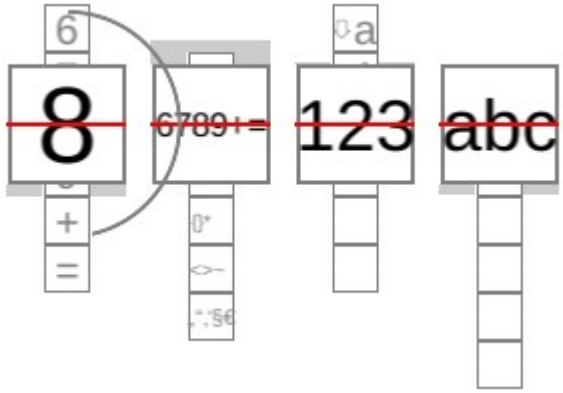


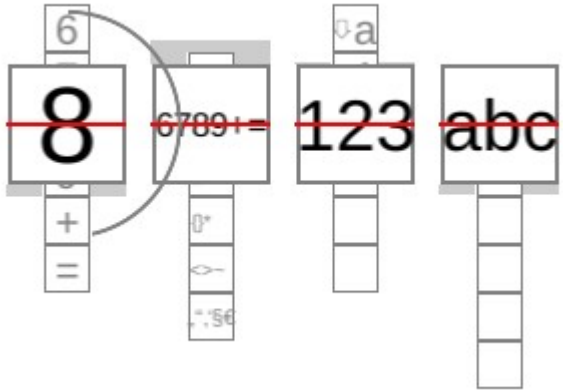
Input Space (2)

- 6 per finger



Input Space (2)

- 6 per finger
- timed input, ~1s



Video

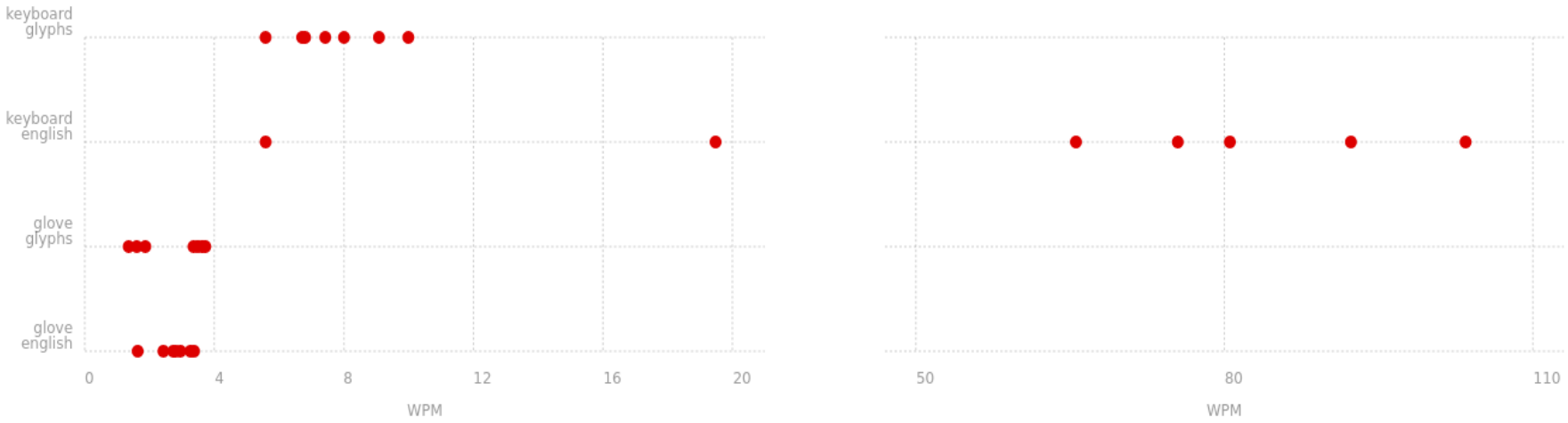
Evaluation

abghabghgbabghgbagbhagbhbgahbga

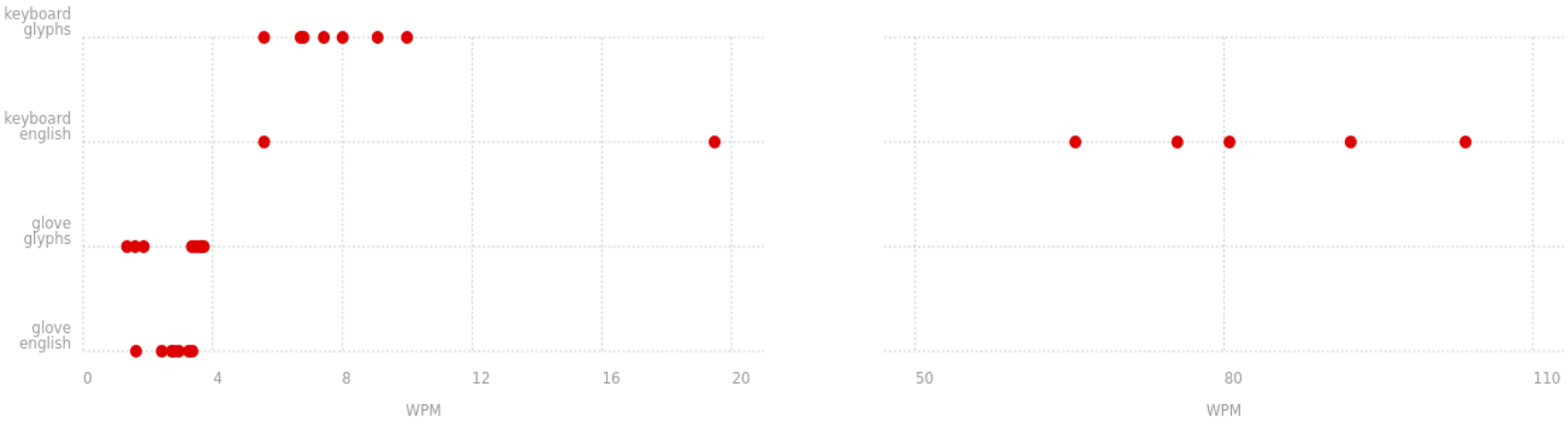
abcghiachbgiAbCgHiIhGcBa

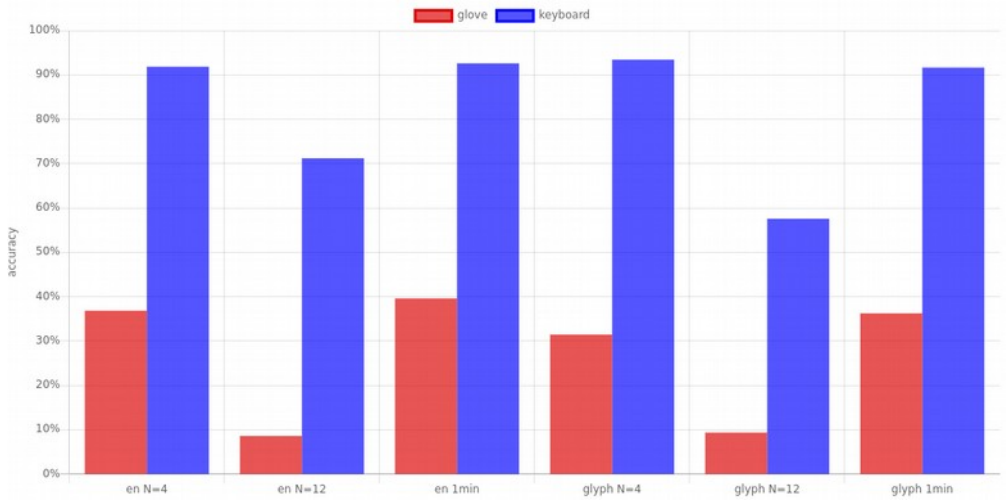
Chuck Norris ist vor 10 Jahren gestorben. Der Tod hatte bis jetzt nur noch nicht den Mut es ihm zu sagen.

Evaluation (2)

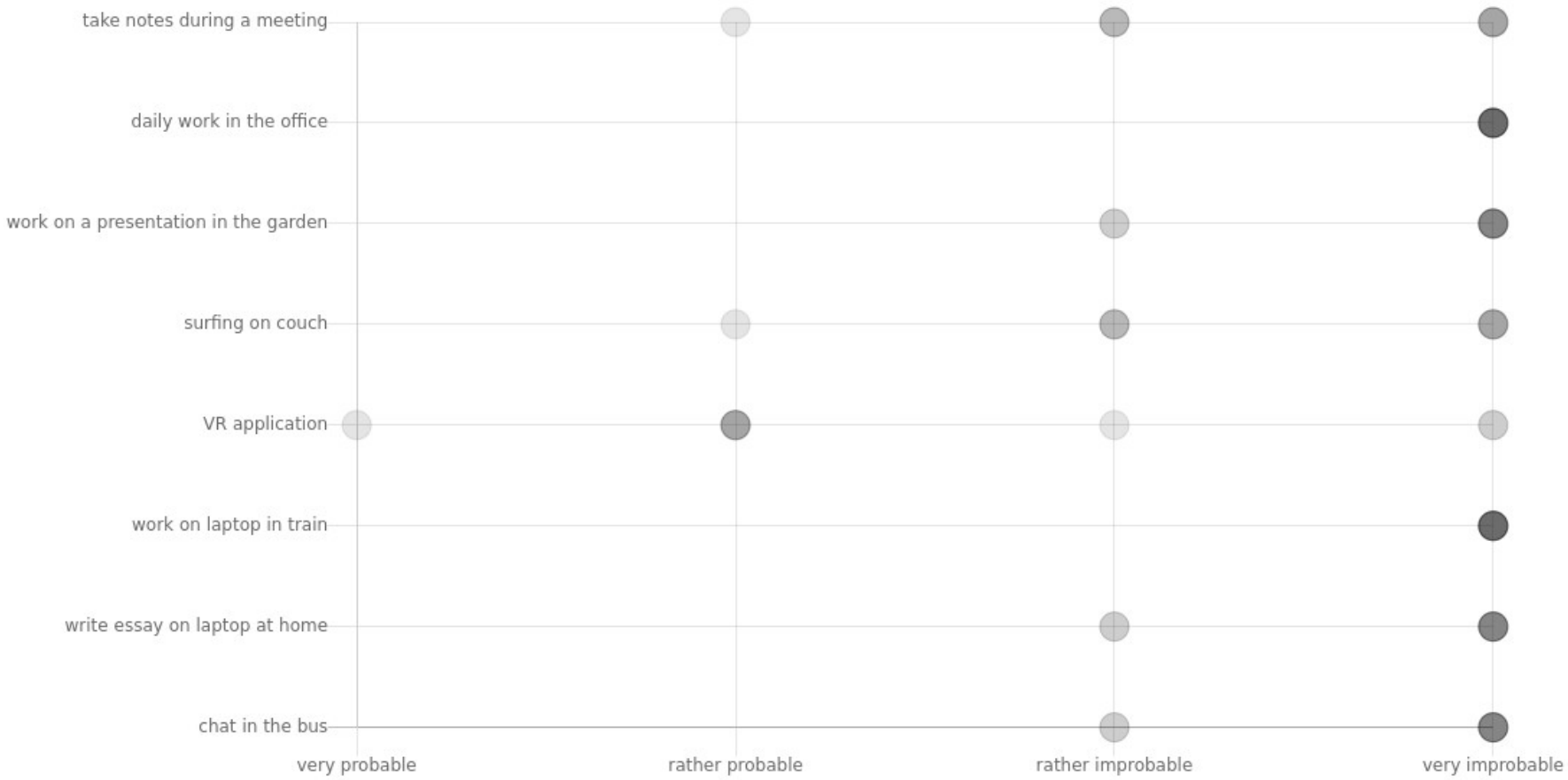


Evaluation (2)





Evaluation (3)



Conclusion

Conclusion

- not ready for use

Conclusion

- not ready for use
- still much potential unevaluated

Sources

- [LO98] R Liang and M Ouhyoung. A real-time continuous gesture recognition system for sign language. 1998.

Images

- https://pixabay.com/vectors/computer-desktop-workstation-office-158675/
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- [WP14] D Way and J Paradiso. A usability user study concerning free-hand microgesture and wrist-worn sensors. 2014.
- [CYKW18] T Chan, Y Yu, H Kam, and K Wong. Robust hand gesture input using computer vision, inertial measurement unit (imu) and flex sensors. 2018.