

## *Exploring Personal Data in Virtual Reality*

### *Background*

Popular health tracking devices such as Fitbit aim to offer users more insight into their health and well-being through automated tracking of steps, heart rate, stress and sleep. Such systems are often referred to as personal informatics systems, which are systems that help people collect personally relevant information for the purpose of gaining self-knowledge [5]. Through reflecting on their data, a user can come to an understanding of their health and well-being. Reflection is therefore seen as a key enabler for positive experiences in one's personal informatics journey.

However, the current generation of personal informatics systems have been critiqued in the past for not actively encouraging reflection [3, 4]. As noted by Baumer [1], these systems carry an implicit assumption that by showing a user visualisations of their past data for the purpose of reflection, that reflection will occur. However, as also noted by Slovak [8], this conflicts with reflection theories that underscore the importance of encouraging reflection, seeing that it often does not occur automatically.

This project offers a great opportunity to try working with VR and interactive experiences. We also offer the possibility to work in a relaxed international research team and contribute to developing concepts of future systems for wellbeing.

### *Problem description*

Currently, there is a lack of tools to support reflection and there is little structured insight on how to design for reflection. A recent study by Bentvelzen et al. [2] demonstrates a need for interactive tools that allow users to adjust their perspective on their data to facilitate reflection.

Virtual reality could offer users the possibility to view and interact with their data from different perspectives. This might lead to a more engaging exploration of personal data, especially compared to the 2-dimensional visualizations that current fitness trackers (and their accompanying apps) use to communicate data. As such, in this bachelor project you would design and implement a VR experience in which a user can explore their personal data, and investigate if such an experience fosters reflection.

## Suggested Reading Material

- [1] Eric P.S. Baumer et al. "Reviewing reflection: On the use of reflection in interactive system design". In: *Proceedings of the Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques, DIS* (2014), pp. 93–102. DOI: 10.1145/2598510.2598598.
- [2] Marit Bentvelzen, Jasmin Niess, and Pawel W. Wozniak. "The technology-mediated reflection model: Barriers and assistance in data-driven reflection". In: *Conference on Human Factors in Computing Systems - Proceedings. CHI '21*. New York, NY, USA: Association for Computing Machinery, 2021. ISBN: 9781450380966. DOI: 10.1145/3411764.3445505. URL: <https://doi.org/10.1145/3411764.3445505>.
- [3] Eun Kyoung Choe et al. "Understanding self-reflection: How people reflect on personal data through visual data exploration". In: *ACM International Conference Proceeding Series. PervasiveHealth '17*. New York, NY, USA: Association for Computing Machinery, 2017, pp. 173–182. ISBN: 9781450363631. DOI: 10.1145/3154862.3154881. URL: <https://doi.org/10.1145/3154862.3154881>.
- [4] Rafal Kocielnik et al. "Reflection Companion: A Conversational System for Engaging Users in Reflection on Physical Activity". In: *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.* 2.2 (July 2018). DOI: 10.1145/3214273. URL: <https://doi.org/10.1145/3214273>.
- [5] Ian Li, Anind Dey, and Jodi Forlizzi. "A Stage-Based Model of Personal Informatics Systems". In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. CHI* fffdfddfffd10. New York, NY, USA: Association for Computing Machinery, 2010, 557ffdfddfffd566. ISBN: 9781605589299. DOI: 10.1145/1753326.1753409. URL: <https://doi.org/10.1145/1753326.1753409>.
- [6] Elizabeth L Murnane et al. "Designing Ambient Narrative-Based Interfaces to Reflect and Motivate Physical Activity". In: *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems. CHI '20*. New York, NY, USA: Association for Computing Machinery, 2020, 1ffdfddfffd14. ISBN: 9781450367080. DOI: 10.1145/3313831.3376478. URL: <https://doi.org/10.1145/3313831.3376478>.
- [7] Kim Sauvé et al. "A Change of Perspective: How User Orientation Influences the Perception of Physicalizations". In: *Proceedings of the 2020 CHI Conference on Human Factors in Computing*

*Systems*. CHI '20. New York, NY, USA: Association for Computing Machinery, 2020, 1fffdfffdfffd12. ISBN: 9781450367080. DOI: 10.1145/3313831.3376312. URL: <https://doi.org/10.1145/3313831.3376312>.

- [8] Petr Slovak, Chris Frauenberger, and Geraldine Fitzpatrick. “Reflective practicum: A framework of sensitising concepts to design for transformative reflection”. In: *Conference on Human Factors in Computing Systems - Proceedings 2017-May* (2017), pp. 2696–2707. DOI: 10.1145/3025453.3025516.
- [9] Alice Thudt et al. “Self-reflection and personal physicalization construction”. In: *Conference on Human Factors in Computing Systems - Proceedings 2018-April* (2018), pp. 1–13. DOI: 10.1145/3173574.3173728.

### *Further details*

#### *Special prerequisites:*

- Willingness to learn programming in unity
- Affinity with VR

*Target group:* DV, D and IT students

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Supervision in this project is offered in a number of European languages including Swedish. However, as this is a collaborative project most material and some meetings will be in English.