

Schlafüberwachung mit ToF Kamera

Dominic Jossen

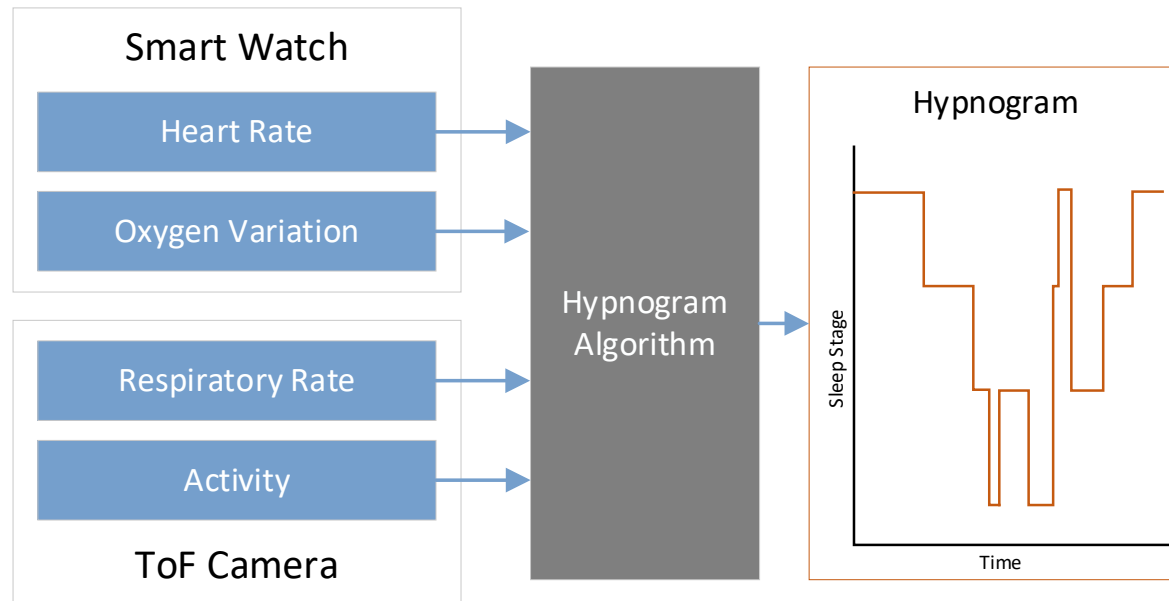
23.01.2023

Schlaflabor für Zuhause

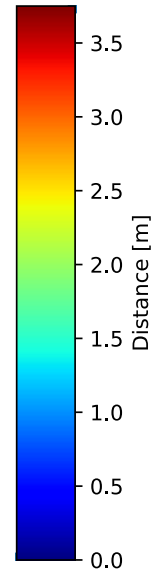
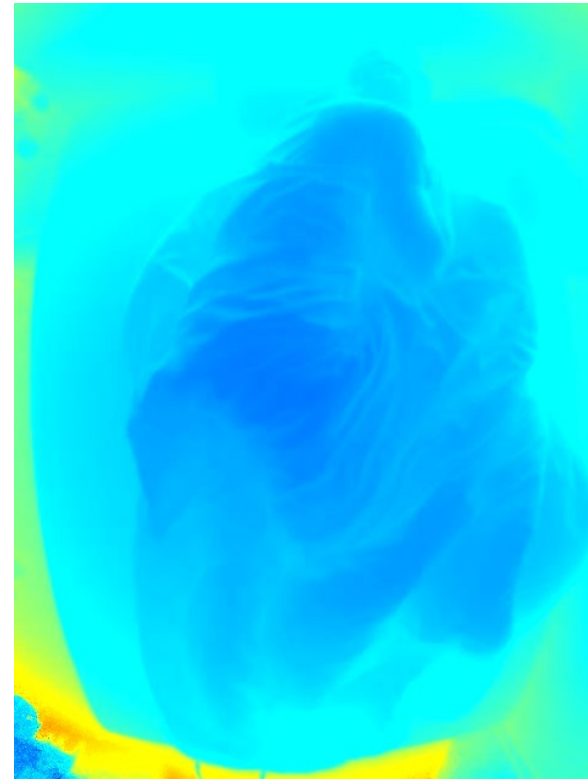


[1]

Vorprojekte

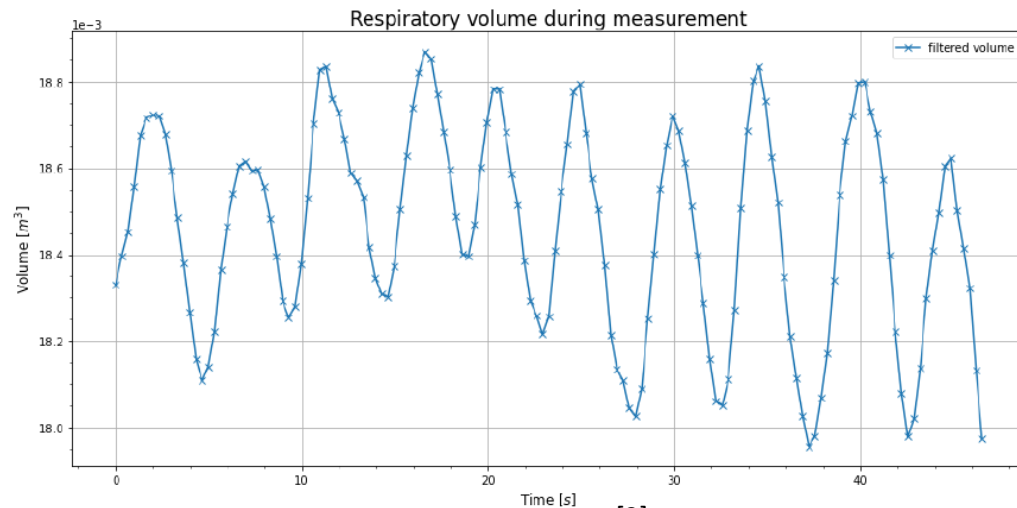


ToF Kamera

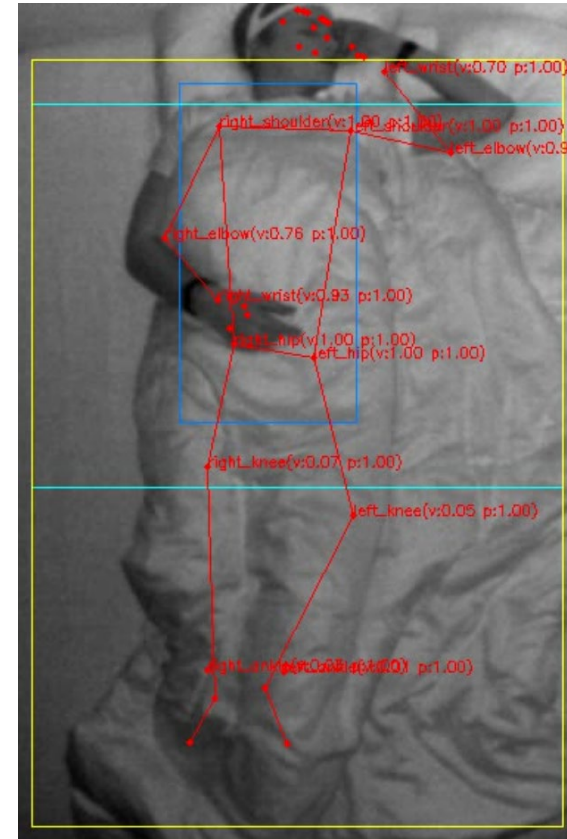


Vorprojekte

- Pose Estimation  MediaPipe
- Region of Interest
- 3 fps mit CPU
- Nicht in Echtzeit



[2]

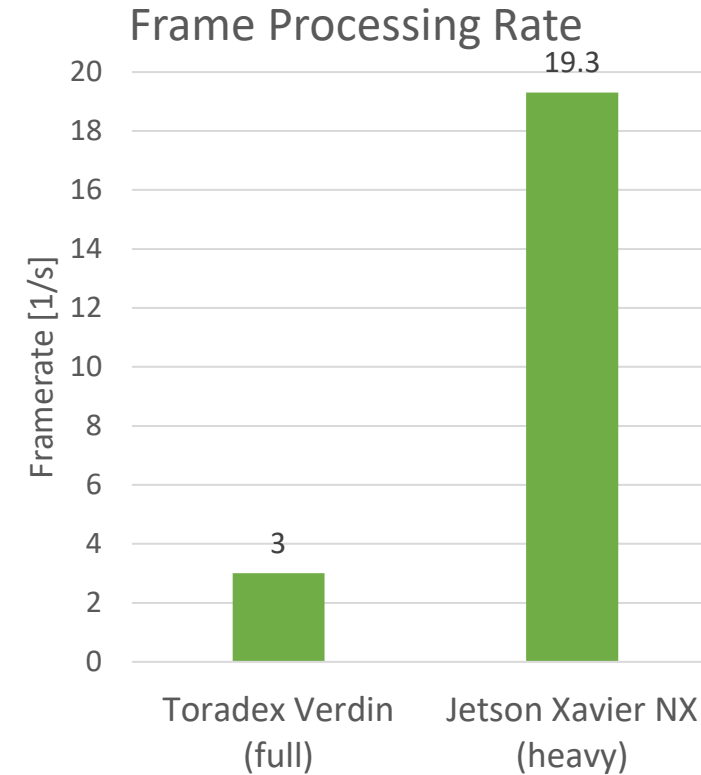


Ziele

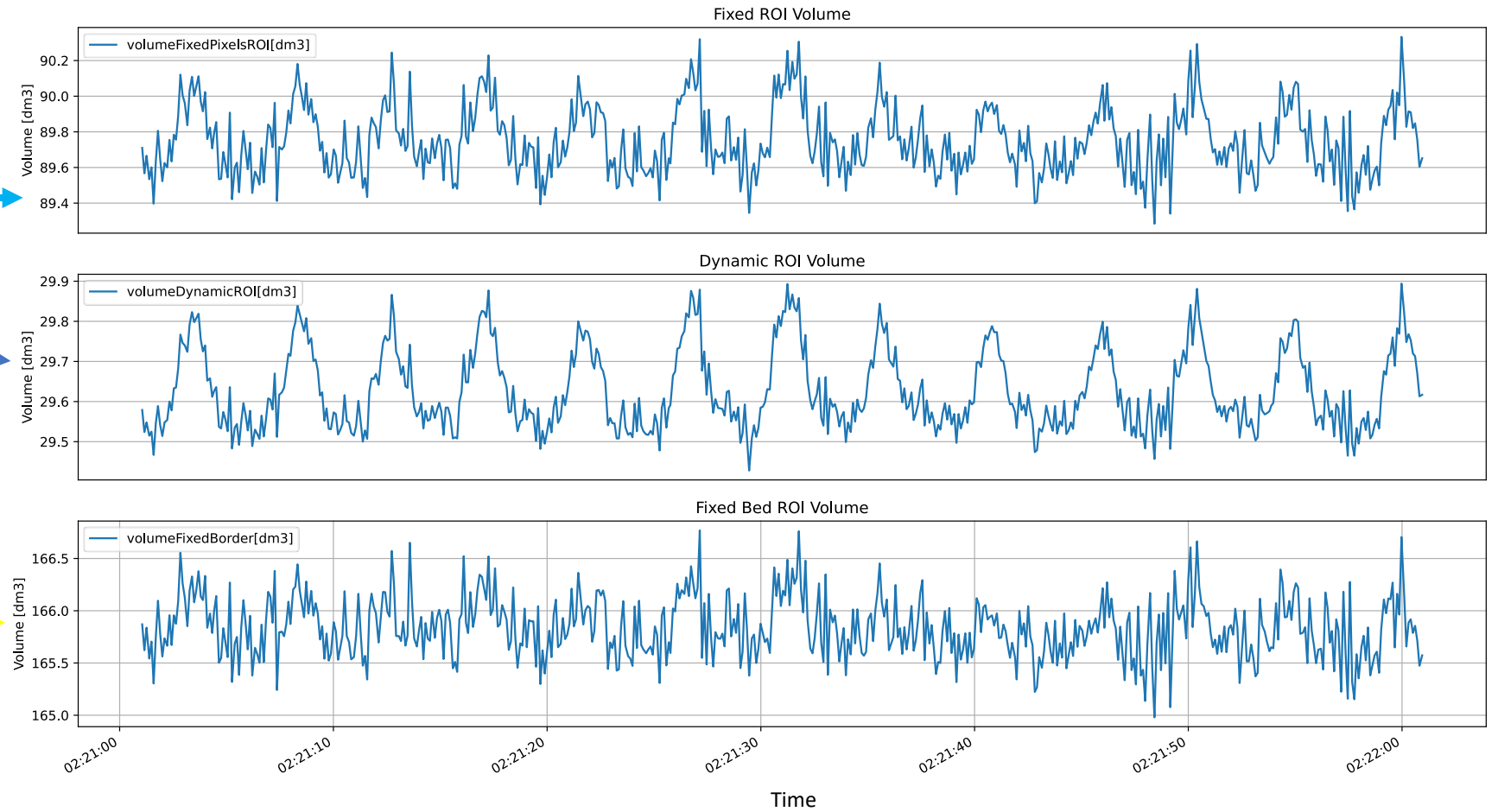
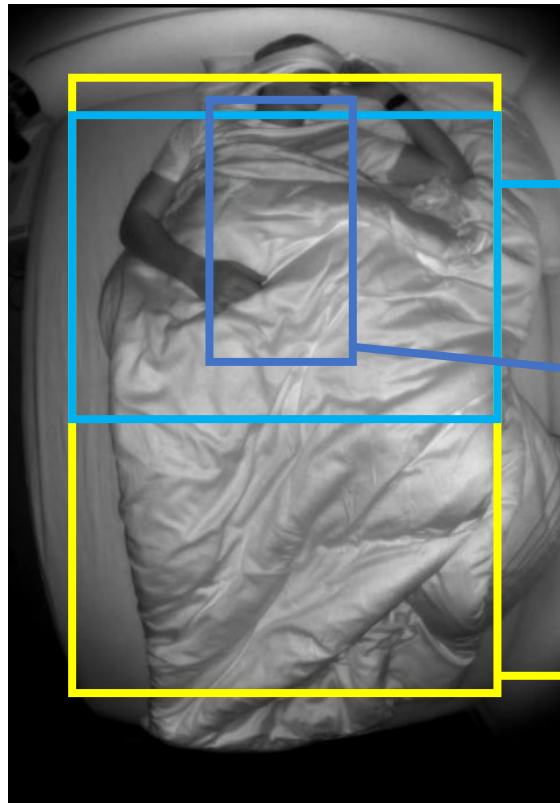
- Embedding
 - Hardwareauswahl
 - Kamera verwenden
 - Pose Estimation CPU → GPU
- Höhere Framerate
- Algorithmus für Atemfrequenz

Erreichte Bildrate

- NVIDIA Jetson
- NVIDIA CUDA



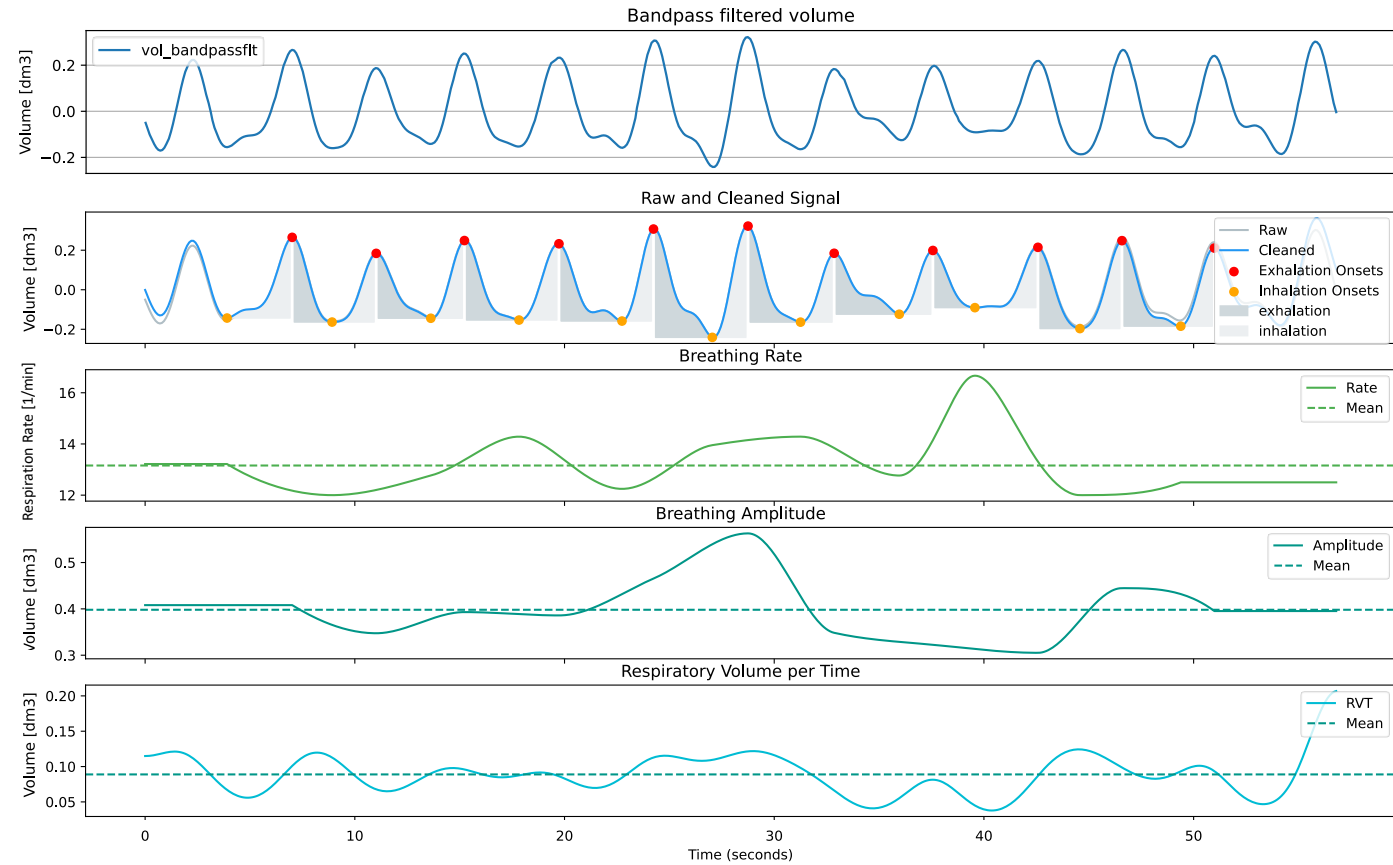
3 ROIs



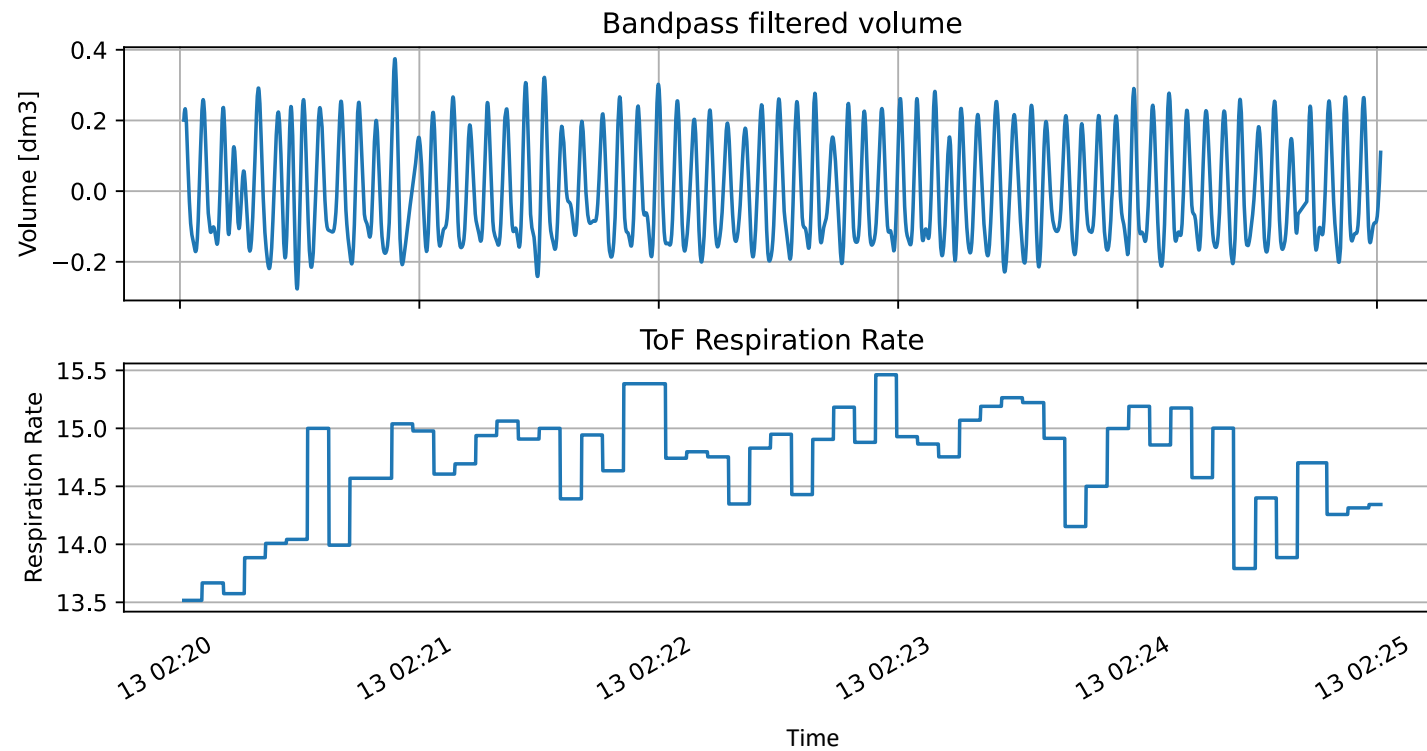
Bestimmung der Atemfrequenz

NeuroKit2

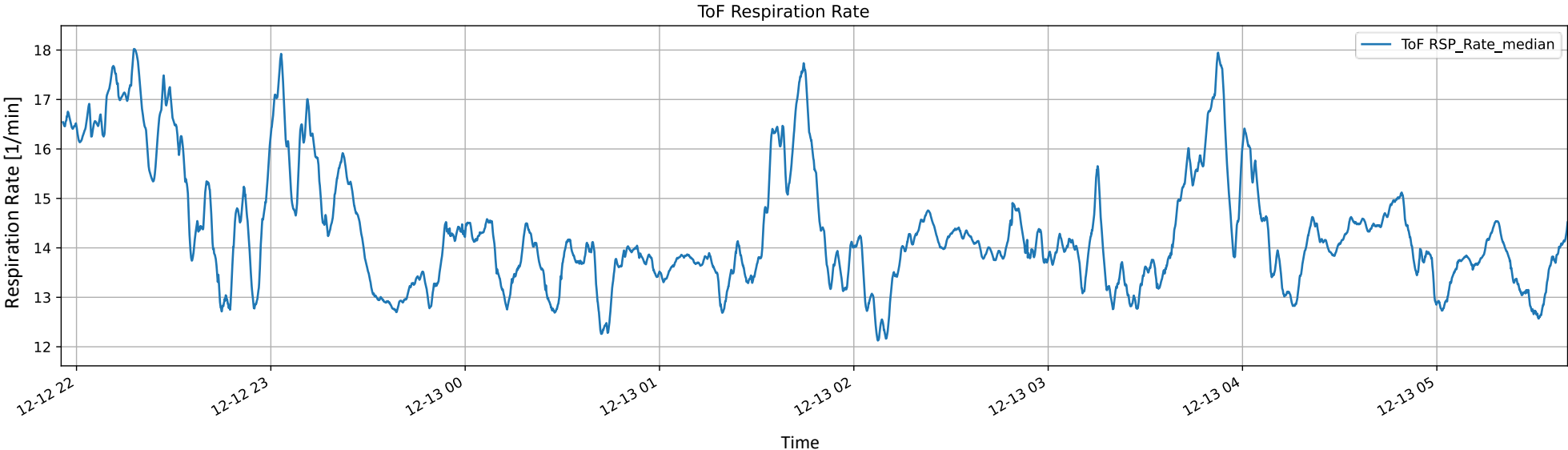
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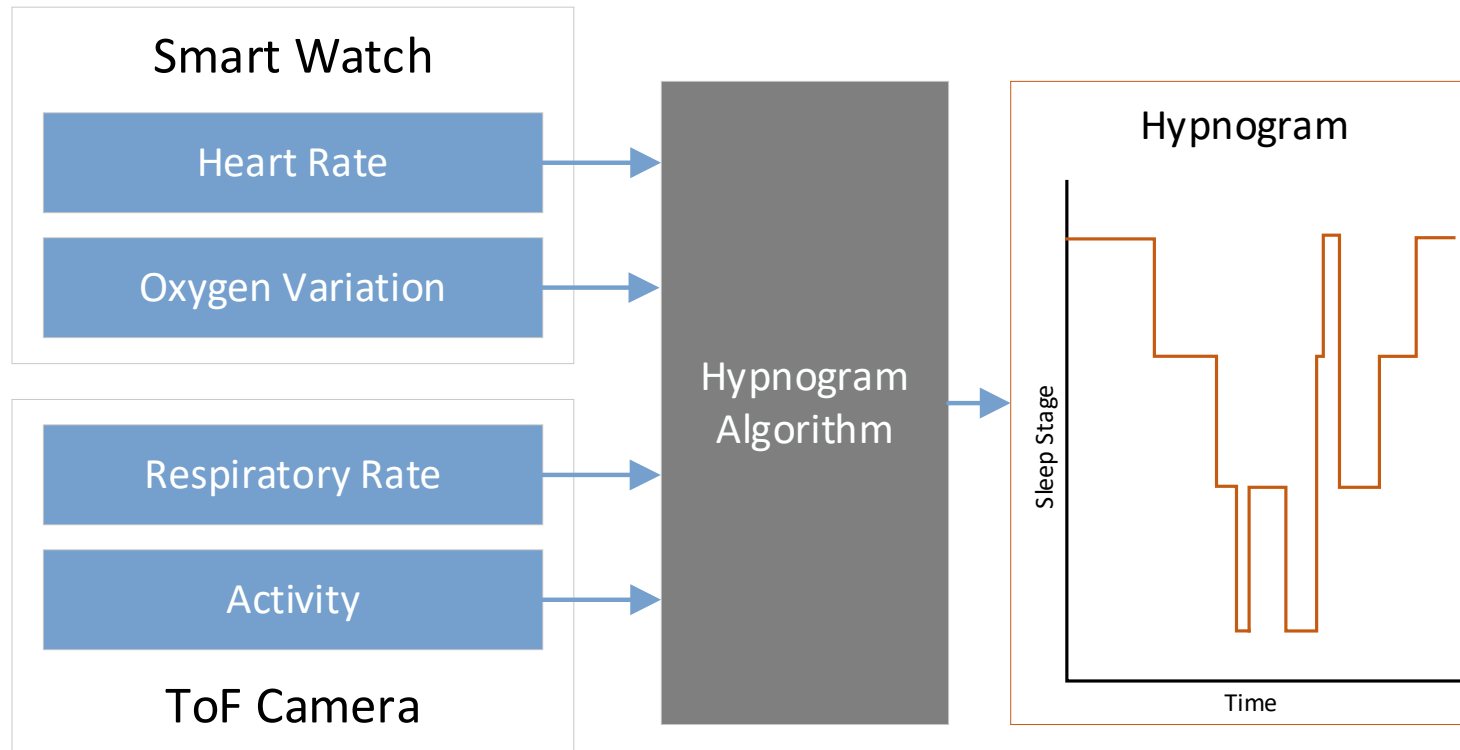
Bestimmung der Atemfrequenz



Atemfrequenz über Nacht



Ausblick



Quellen

- [1] SleepSomatics Diagnostic Center, “What is an In-Lab Sleep Study?,” [Online]. Available: sleepsomatics.com/sleepsomatics-in-lab-sleep-study. [Accessed 25 10 2022].
- [2] D. Ziswiler, “Image based Embedded Respiration Measurement using 3D ToF,” Horw, 2022.
- [3] Makowski, D., Pham, T., Lau, Z.J. et al. NeuroKit2: A Python toolbox for neurophysiological signal processing. Behav Res 53, 1689–1696 (2021).