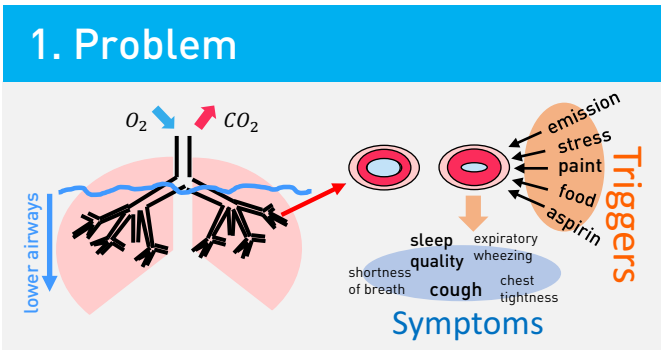


Smartphone-based Cough and Sleep Quality Detection

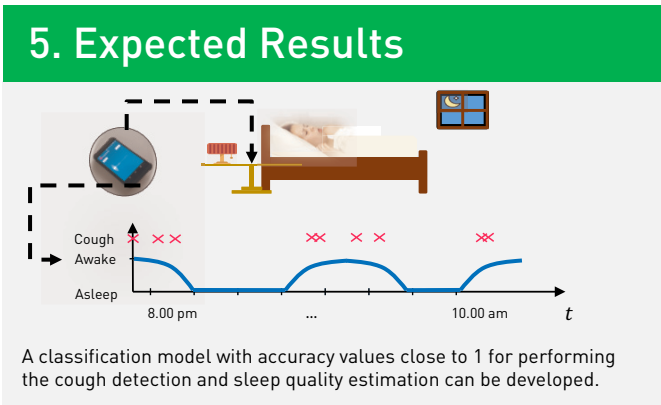
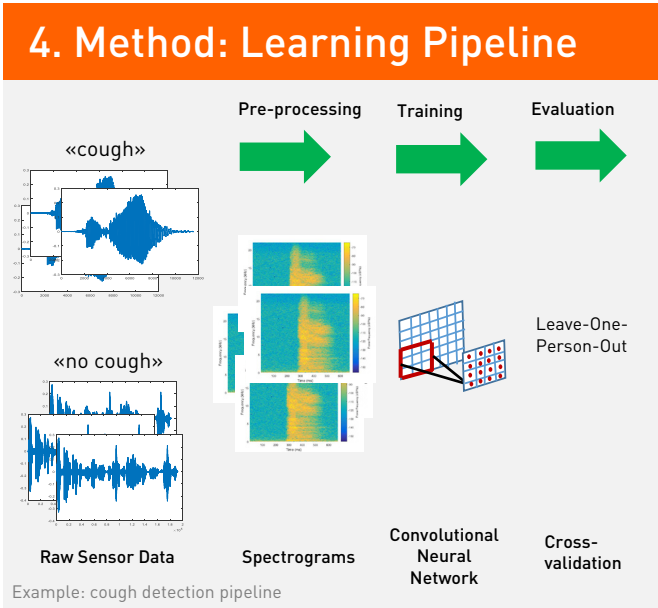
Filipe Barata¹, Peter Tinschert², Frank Rassouli³, Florent Baty³, Martin Brutsche³,
 Claudia Steurer-Stey^{4,5}, Milo Puhan⁴, Elgar Fleisch^{1,2} & Tobias Kowatsch²
¹ ETH Zurich, ² University of St.Gallen, ³ Cantonal Hospital St.Gallen, ⁴ University of Zurich & ⁵ medix Zurich



2. Research Question

To which degree of accuracy can a mobile application detect **asthmatic nocturnal cough** and **sleep quality** with the smartphone's built-in microphone?

- ### 3. Research Framework
- Marsden et al. (2016): Nocturnal cough frequency provides an objective assessment of asthma symptoms that **correlates** with standard measures of **asthma control**
 - Luyster et al. (2012): **Sleep quality is associated with asthma control** even if accounted for concomitant diseases



References

Barata, F., Kowatsch, T., Tinschert, P., Filler, A., Personal MobileCoach: Tailoring Behavioral Interventions to the Needs of Individual Participants, UbiComp '16 Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing: Adjunct Workshop Designing, Developing, and Evaluating The Internet of Personal Health (IoPH), Heidelberg, Germany, 1089-1094.
 Luyster, Faith S., et al. "Sleep quality and asthma control and quality of life in non-severe and severe asthma." Sleep and Breathing 16.4 (2012): 1129-1137.
 Marsden, Paul A., et al. "Objective cough frequency, airway inflammation, and disease control in asthma." CHEST Journal 149.6 (2016): 1460-1466.
 Tinschert, P., Barata, F., Kowatsch, T., Enhancing Asthma Control through IT: Design, Implementation and Planned Evaluation of the Mobile Asthma Companion, in Leimeister, J.M.; Brenner, W. (Hrsg.): Proceedings der 13th International Conference on Wirtschaftsinformatik (WI 2017), St. Gallen, 1291-1294.

Partner: Kantonsspital St.Gallen, University of Zurich UZH, medix gruppenpraxis