

1. THE PROBLEM:

- 1 out of 10 Americans has diabetes (source: CDC 2020)
- < 30% has Continuous Glucose Monitoring
- Majority still relies on manual measurements and on making rough predictions

2. THE CHALLENGE:

- Glucose evolution depends on many factors: food consumption, insulin medication, physical activity, etc.

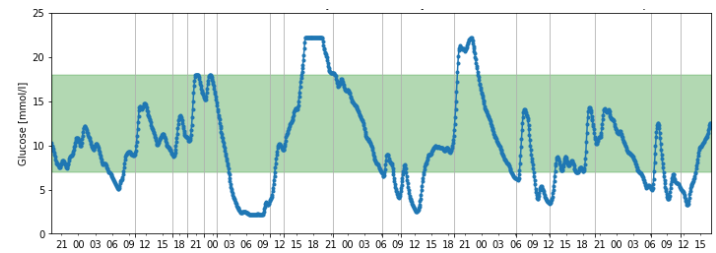
3. THE OPPORTUNITY:

- Physiological signals reflect in part the glucose levels, especially if abnormal
- 1 out of 3 Americans uses or has used a wearable

4. THE PROJECT:

- Improve forecast and control of glucose in-between manual measurements using wearable sensor data

Glucose sensing over multiple days with CGM (green = 'safe' zone)

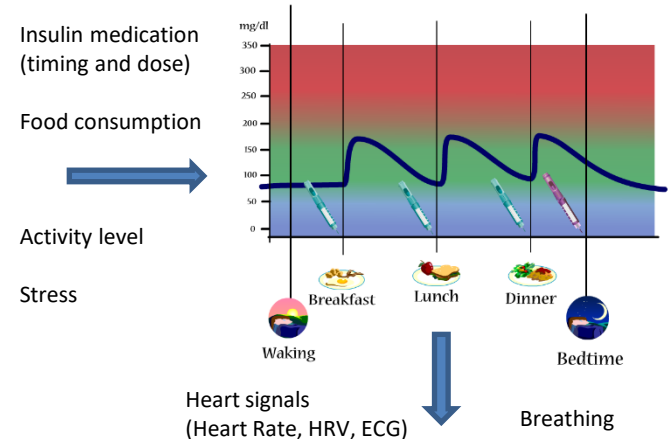


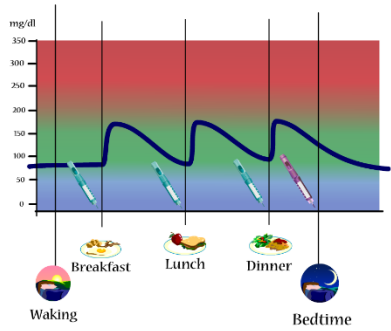
Manual glucose meter



Continuous glucose monitoring (CGM)

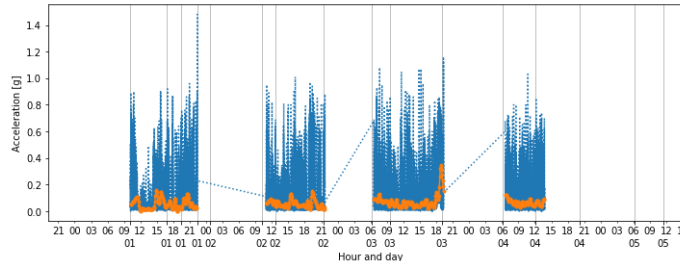
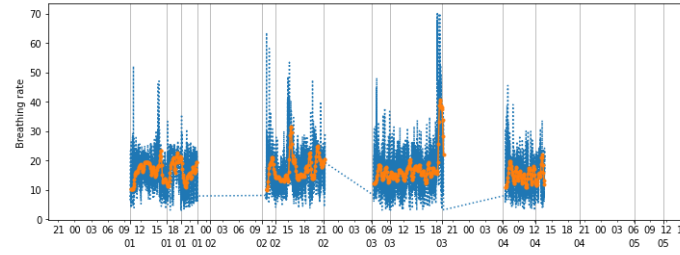
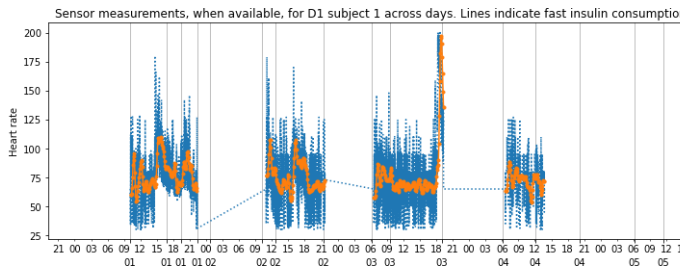
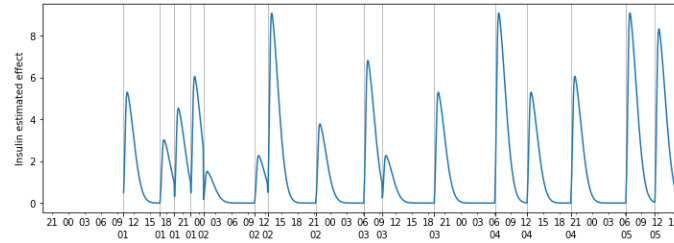
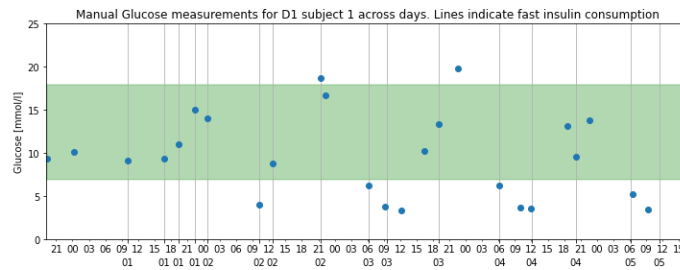
Glucose level evolution in time





THE 'D1NAMO' dataset¹

- Insulin & food information
- Manual & CGM glucose readings
- 1550hrs of wearable data (Zephyr Bioharness),
- 10 D1 subjects and 20 healthy ones



manual glucose

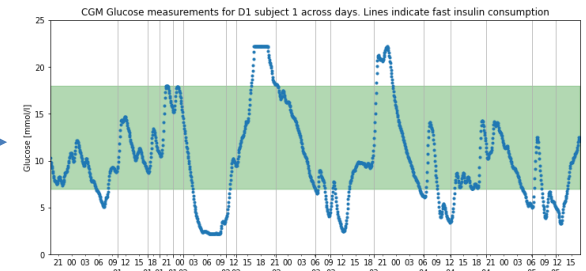
insulin/food

HR

breathing

acceleration

Improved glucose forecast, to be assessed against CGM



ECG, other sensor data

¹ The open D1NAMO dataset: A multi-modal dataset for research on noninvasive type 1 diabetes management, Dubosson et al., 2018