

# ComputerQS: Humans quantified self in front of a computer

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## Motivation

“Quantified self refers both to the [cultural](#) phenomenon of self-tracking with technology and to a community of users and makers of self-tracking tools who share an interest in "self-knowledge through numbers".<sup>[1]</sup> Quantified self practices overlap with the practice of [lifelogging](#) and other trends that incorporate technology and data acquisition into daily life, often with the goal of improving physical, mental, and emotional performance. The widespread adoption in recent years of wearable fitness and sleep trackers such as the [Fitbit](#) or the [Apple Watch](#),<sup>[2]</sup> combined with the increased presence of [Internet of things in healthcare](#) and in exercise equipment, have made self-tracking accessible to a large segment of the population.” [Wikipedia]

Quantified self (QS) is a new and popular trend but most of the time computers are out of the scenario - usually mobiles, smartwatches. Why not explore the potential of computers ( we spend much time in front of a computer ) in the quantified self scenario to obtain usual QS metrics that we got used to?

## Objective

Provide a Quantified Self solution based on a standard computer/laptop (ComputerQS) and compare it with common QS applications & solutions.

You will need to see what resources you have available and the benefits they can bring from a quantified self perspective. Can heart rate be extracted from a webcam? Does the keystroke frequency have any relation with fatigue or other “emotional” status? Can we obtain relevant information from a typical keyboard, screen, mouse, webcam,...?

From a technical perspective, as in any QS system, the ComputerQS should be able to:

- to store the information
- review/replay acquired information
- ideally, allow remote monitoring and/or dashboard ( [FACS](#) or [Emotiva](#) are good examples )

## Challenges

These offer some challenges:

- Explore computer/laptop resources from a QS perspective?
- Can the computer QS be complemented with other sensors namely from smartwatch or environment air quality?

**Why not explore AI/ML models to ...**

- Detect changes that may be relevant.
- How does your QS status change your reactions to a given stimulus stimulus?

## Research scope

This work is integrated within the R&D activities of IEETA

## Tentative work plan

- Select scenarios and Identify requirements
  - Understand QS and usual use cases - e.g. <https://quantifiedself.com/get-started/>
  - Identify scenarios can be useful for ComputerQS and what is interesting to quantify
- familiarisation with the technical challenges in ComputerQS
  - Capturing what is happening in a computer - keylogger, face segmentation
  - Gather and stream information - e.g. messaging
  - Collect and review information - e.g. time series databases, dashboards
- Implementation & demonstration scenario deployment
  - Dashboard
- Evaluation in selected scenarios
  - Performance, detection of activities/reactions

## References

Quantified Self

[https://en.wikipedia.org/wiki/Quantified\\_self](https://en.wikipedia.org/wiki/Quantified_self)  
<https://quantifiedself.com/>

Daniel Barbosa de Oliveira, "A multi-modal approach for affective data gathering", MIECT, Universidade de Aveiro, 2019  
<http://hdl.handle.net/10773/29400>

Facial Action Coding System (FACS) – A Visual Guidebook By Bryn Farnsworth

<https://imotions.com/blog/learning/research-fundamentals/facial-action-coding-system/>

Emotiva

<https://emotiva.it/en/emotion-ai-company/>