Zamanya-InViTAG  
– A Seamless Platform to Analyze Wearable (and Actigraphy) Data –

**Project Description.** We propose to develop an interactive visualization platform to support clinicians grouping patients by their sleep and physical activity patterns from wearable data. The main visualization interface called InViTAG, is coded within the Python-Flask JavaScript framework. It requires advanced machine learning and artificial intelligence processing developed in a Python library called Zamanya. All wearable data come from a third system called SIHA. We need to connect these three platforms to support the user with all the available functionalities to access and analyze seamlessly large sets of wearable data.

**Zamanya** is a platform dedicated to process and model wearable and actigraphy data. Zamanya support users to add artificial activities into existing sequences to predict the duration and activities that may affect sleep quality or other wellness indicators. Zamanya’s machine learning classifies the sequence’s sleep quality in real-time, and aims at recommending behavior changes for the patient. Data can also be clustered, summarized and represented as topographic maps to ease their analysis by clinicians.

**InViTAG** is a visual analytic interface that supports interactive arrangement and grouping of actigraphy data. It helps the Clinician explore and categorize patients’ data for further biological or clinical investigation. It is supported by Zamanya for processing, clustering and prediction functionalities. For instance, the clinician can arrange thumbnail images representing each patient to form homogeneous groups in a map. Statistical and predictive modeling from Zamanya inform the clinician about the quality of the grouping, and the important factors at play. It also facilitates the semi-automatic categorization of thousands of patients.

We need to improve integration of the Zamanya and InViTAG codes to further its development and ease its installation and maintenance.

**Project Type:** Engineering

**Duties/Activities:** Development of Python code to connect the two platforms, use of API, alignment of code and data structures, documentation of code and installation on QCRI server.

**Required Skills:** Python, Javascript, HTML, API, Docker.

**Preferred Intern Academic Level:** B.Sc. (4th year)

**Learning Opportunities:** Learn about Python, full-stack web development, API, Docker.

**Expected Team Size:** 1 student

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