Track 2: Predicting macronutrient information from glucose, physical activity and demographic information

In this track, participants will need to predict an estimate of macronutrients in a meal based on its corresponding postprandial glucose response. Specifically, they will have to predict the carb caloric ratio (CCR) computed as the ratio of net carbs (carbs in calories – fiber in calories) to the total amount of all macronutrients in calories, which is a measure of glycemic load.

$$CCR = \frac{C_{net}}{C_{net}+P+F+B}$$

Participants will be provided with the CGMacros dataset (link), consisting of 45 subjects. They are free to use the physical activity collected through wearable sensors, phenotype, as well as gut microbiome features, in addition to the glucose data.

Dataset details

The dataset integrates multiple modalities such as demographic information, glucose data from two continuous glucose monitors, physical activity information, and gut microbiome information.

Evaluation

The predictions will be evaluated based on the normalized root mean square error (error divided by the ground truth) [1] and correlation between the predicted and ground truth CCR.

Deliverables

Participants are expected to submit:

- The code used to predict the CCR
- Visualizations and interpretation of the results
- A report (up to 8 pages) describing the approach, methodology, and results

[1]   A. Das *et al.*, "Macronutrient constraints and priors improve carbohydrate predictions from continuous glucose monitors," in *2024 IEEE 20th International Conference on Body Sensor Networks (BSN)*, 2024: IEEE, pp. 1-4.