

DRAWINGS

Receive structured original data, divide the structured original data into a numerical feature and a categorical feature, execute piecewise linear transformation on the numerical feature by a dual-stream feature encoder to obtain a normalized main feature, and execute adaptive quantum encoding on the categorical feature to obtain a continuous value graphping feature; perform adaptive weight allocation by a learnable gating mechanism, and fuse the normalized main feature with the continuous value graphping feature to obtain a fusion feature; and perform dynamic sampling on the basis of an importance score of the fusion feature to generate an enhanced training sample set

S101

Input the enhanced training sample set into a feature extraction network which contains a hierarchical attention module and a self-calibration module, the hierarchical attention module computing a similarity matrix of sample features, constructing a feature affinity graph on the basis of the similarity matrix, and dividing the feature affinity graph into a plurality of feature sub-graphs through a graph segmentation algorithm; in each feature sub-graph, extract local feature representation by a causal attention mechanism, and integrate a plurality of local feature representation through a cross-sub-graph attention fusion mechanism to obtain a global feature representation; and receive the global feature representation by the self-calibration module, and perform feature nonlinear transformation by residual connection and dynamic normalization to obtain a deep feature representation

S102

Construct an information bottleneck feature filter, and filter the deep feature representation by maximizing task related information and minimizing redundant information to obtain a key feature subset; input the key feature subset into a dual-branch network containing a main prediction branch and an auxiliary reconstruction branch, the main prediction branch processing the key feature subset based on the attention mechanism to obtain a feature weight vector, and generating a prediction result according to the feature weight vector, and the auxiliary reconstruction branch providing a regularization constraint by reconstructing the key feature subset; and according to the feature weight vector and the prediction result, compute the contribution of each feature in the key feature subset to the prediction result by a structured gradient method to generate an analysis result

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FIG. 1

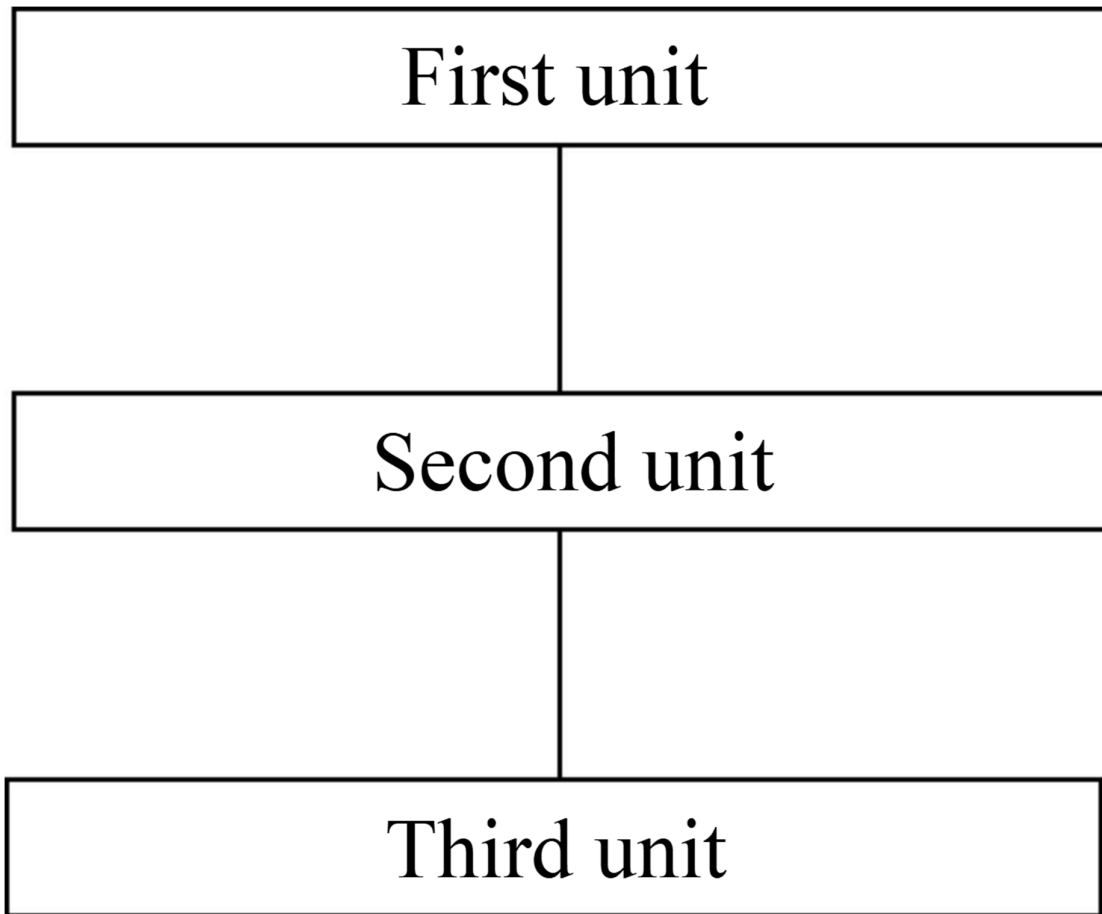


FIG. 2