Claims

1. A processor-implemented method for generating a hybrid learning technique for sensor signal analytics, the method comprising:

receiving sensor signals as an input, wherein the sensor signals are captured using a plurality of different sensors;

processing the received the sensor signals for noise removal;

choosing a plurality of learning techniques for the processed sensor signal based on a plurality of domain constraints;

generating feature recommendation techniques to derive a set of features from the extracted plurality of generated features based on a plurality of statistical measures corresponding to the extracted plurality of generated features;

generating a plurality of hybrid learning techniques from the plurality of learning techniques wherein hybrid learning techniques refer to a hybrid combination of learning techniques that include deep learning, machine learning and signal processing;

generating a performance matrix individually for each of the plurality of hybrid learning techniques based on optimization techniques;

predicting the hybrid learning technique from the generated plurality of hybrid learning techniques based on the performance matrix; and

generating an unique feature representation for the predicted hybrid learning techniques.

2. The method according to claim 1, wherein generating feature in the deep learning is performed based on TimeNeT based feature extraction and generating feature in signal processing is performed by splitting each of the

plurality of sensor signals to a plurality of time windows; transforming each of the plurality of sensor signals in each of the plurality of time windows to time domain, frequency domain, and wavelet domain.

3. The method according to claim 1, wherein the plurality of sensors are from diverse application domains including exemplary domains physiological time series sensor signals that include Electrocardiography (ECG), electroencephalography (EEG), motion sensors that include accelerometer, gyro meter, magnetometer, temperature sensors.

4. The method according to claim 1, wherein the plurality of learning techniques are chosen using a rule based engine and domain constraints, wherein the domain constraints include business requirements and computational constraints.

5. The method according to claim 1, wherein the plurality of hybrid learning techniques are generated based on feature generation, feature recommendation and classification techniques.

6. The method according to claim 5, wherein features generation techniques are based on unsupervised learning techniques that include deep learning and signal processing techniques (feature space exploration) information theoretic, and statistical features along with features of pre-trained deep recurrent neural network.

7. The method according to claim 6, where the generated features generation techniques are fused to generate a unique feature representation that represents the hybrid learning technique to be displayed on an output module.

8. The method according to claim 5, wherein the feature recommendation techniques are implemented based on statistical measures, ranking, classification techniques and the classification techniques include deep learning and machine learning techniques.

9. The method according to claim 1, wherein the performance matrix is generated based on optimization techniques that include performing constraint optimization, wherein parameters are maximized based on a pre-defined threshold.

10. The method according to claim 1, wherein the predicted hybrid learning technique and its corresponding unique feature representation is displayed on the output module for signal analytics of the received sensor signals.

11. A system for generating a hybrid learning technique for sensor signal analytics, comprising:

a memory storing instructions and one or more modules;

a database;

one or more communication or input/output interfaces; and

one or more processors coupled to the memory via the one or more communication interfaces, wherein the one or more processors are configured by the instructions to execute the one or more modules comprising:

an input module for receiving sensor signals as an input, wherein the sensor signals are captured using a plurality of different sensors;

a pre-processing and noise cleaning module for processing the received the sensor signals for noise removal;

a path selector for choosing a plurality of learning techniques for the processed sensor signal based on a plurality of domain constraints;

a feature generation module, a feature recommendation module and a classification module for generating a plurality of hybrid learning techniques from the plurality of learning techniques wherein hybrid learning techniques refer to a hybrid combination of learning techniques that include deep learning, machine learning and signal processing and for generating feature recommendation techniques to derive a set of features from the extracted plurality of generated features based on a plurality of statistical measures corresponding to the extracted plurality of generated features;

an optimization module for choosing a hybrid learning technique from the generated plurality of hybrid learning techniques based on the performance matrix generated individually for each of the plurality of hybrid learning techniques based on optimization techniques; and

an output module for displaying the chosen hybrid learning technique signal analytics of the received sensor signals.

12. The system according to claim 11, wherein the feature generation module further comprises of deep learning module and signal processing module for generating unsupervised learning techniques that include deep learning and signal processing , information theoretic analysis, and statistical analysis along with features of pre-trained deep recurrent neural network.

13. The system according to claim 11, wherein the classification module further comprises a deep learning (DL) classification module and a machine learning (ML) classification module for generating classification techniques include deep learning and machine learning techniques.

14. The system according to claim 11, further includes a domain knowledge for providing domain constraints to the path selector for choosing a plurality of

learning techniques for the processed sensor signal.

15. A computer program product comprising a non-transitory computer readable medium having a computer readable program embodied therein, wherein the computer readable program, when executed on a computing device, causes the computing device to:

receive sensor signals as an input, wherein the sensor signals are captured using a plurality of different sensors;

process the received the sensor signals for noise removal;

choose a plurality of learning techniques for the processed sensor signal based on a plurality of domain constraints;

generating feature recommendation techniques to derive a set of features from the extracted plurality of generated features based on a plurality of statistical measures corresponding to the extracted plurality of generated features;

generate a plurality of hybrid learning techniques from the plurality of learning techniques wherein hybrid learning techniques refer to a hybrid combination of learning techniques that include deep learning, machine learning and signal processing;

generate a performance matrix individually for each of the plurality of hybrid learning techniques based on optimization techniques;

predict the hybrid learning technique from the generated plurality of hybrid learning techniques based on the performance matrix; and

generate an unique feature representation for the predicted hybrid learning techniques.