

CLAIMS

1. A processor-implemented method for providing a unified platform for domain adaptable human behaviour inference, the method comprising:

receiving a plurality of sensor data using a plurality of sensors, wherein the plurality of sensor data is in more than one sensor data formats;

processing the received sensor data to a standard format;

analyzing the processed sensor data using cross-sectional analysis to obtain low level inference, wherein the cross-sectional analysis for low level inference includes analyzing details of location, activity, temperature, and physiology;

analyzing the processed sensor data using a plurality of longitudinal analysis and Fourier analysis techniques based on the low level inference, domain knowledge and human metadata, wherein the domain knowledge includes knowledge of health, shopping, retail and driving standards, dynamically updated in a domain database, wherein the human metadata including mobility, proximity, activity for human is dynamically updated in a human metadata database;

selecting a longitudinal analysis technique from the plurality of longitudinal analysis techniques for obtaining high level inference, wherein the longitudinal analysis for obtaining the high level inference includes welch analysis, cross-spectrum analysis, Feature of interest (FOI) identification and time-series clustering, autocorrelation-based distance estimation and exponential smoothing, seasonal & non-seasonal models identification, ARIMA modelling, Hidden Markov models, Long short term memory (LSTM) along with the low level inference, human meta-data and the domain knowledge to provide useful and actionable insights for longitudinal tracking, prediction, and anomaly detection, wherein the longitudinal analysis technique is selected based on expectation maximization techniques; and

obtaining domain adaptable human behaviour inference using the unified platform based on the obtained low level inference and the high level inference, wherein the unified platform provides a unified low level inference and high level inference of the domain adaptable human behaviour inference across multiple domains.

2. The method of claim 1, wherein the plurality of sensors includes wearable, infrastructure sensors that includes sensors embedded in infrastructures, near field sensors that include low-power ultrasound sensors, passive radio-frequency identification (RFID), infrared sensors, near-field communication (NFC) sensors and soft sensors that include databases with exhaustive details regarding the users.
3. The method of claim 1, wherein processing the received sensor data to the standard format comprises time series format using linear, non-linear interpolation and phase removing filters.
4. The method of claim 1, wherein Fourier analysis techniques is performed using sliding window to identify shift in frequency domain.
5. The method of claim 1, wherein obtained human behaviour inference is displayed on a unified display module based on a user query.
6. A system comprising:
 - a memory storing instructions and one or more modules;
 - a database;
 - one or more communication or input/output interfaces; and

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

- a input module for receiving a plurality of sensor data using a plurality of sensors, wherein the plurality of sensor data is in more than one sensor data formats;

- a pre-processor for processing the received sensor data to a standard format;

- a low level inference module for analyzing the processed sensor data using cross-sectional analysis to obtain low level inference, wherein the cross-sectional analysis for low level inference includes analyzing details of location, activity, temperature, and physiology;

- a high level inference module for analyzing the processed sensor data using a plurality of longitudinal analysis and Fourier analysis techniques based on the low level inference, domain knowledge and human metadata, wherein the domain knowledge includes knowledge of health, shopping, retail and driving standards, and dynamically updated in a domain database, wherein the human metadata including mobility, proximity, activity for human is dynamically updated in a human metadata database; and

- selecting a longitudinal analysis technique from the plurality of longitudinal analysis techniques for obtaining high level inference, wherein the longitudinal analysis for obtaining the high level inference includes welch analysis, cross-spectrum analysis, Feature of interest (FOI) identification and time-series clustering, autocorrelation-based distance estimation and exponential smoothing, seasonal & non-seasonal models identification, ARIMA modelling, Hidden Markov models, Long short term memory (LSTM) along with the low level inference, human meta-data and the domain knowledge to provide useful and actionable insights for longitudinal tracking, prediction, and anomaly detection, wherein the longitudinal analysis technique is selected based on expectation maximization techniques; and

- a unified display module for displaying domain adaptable human behaviour inference using a

unified platform based on the obtained low level inference and the high level inference, wherein the unified platform provides a unified low level inference and high level inference of the domain adaptable human behaviour inference across multiple domains.

7. One or more non-transitory machine readable information storage mediums comprising one or more instructions which when executed by one or more hardware processors cause:

receiving a plurality of sensor data using a plurality of sensors, wherein the plurality of sensor data is in more than one sensor data formats;

processing the received sensor data to a standard format;

analyzing the processed sensor data using cross-sectional analysis to obtain low level inference, wherein the cross-sectional analysis for low level inference includes analyzing details of location, activity, temperature, and physiology;

analyzing the processed sensor data using a plurality of longitudinal analysis and Fourier analysis techniques based on the low level inference, domain knowledge and human metadata, wherein the domain knowledge includes knowledge of health, shopping, retail and driving standards, and dynamically updated in a domain database, wherein the human metadata including mobility, proximity, activity for human is dynamically updated in a human metadata database;

selecting a longitudinal analysis technique from the plurality of longitudinal analysis techniques for obtaining high level inference, wherein the longitudinal analysis for obtaining the high level inference includes welch analysis, cross-spectrum analysis, Feature of interest (FOI) identification and time-series clustering, autocorrelation-based distance estimation and exponential smoothing, seasonal & non-seasonal models identification, ARIMA modelling, Hidden Markov models, Long short term memory (LSTM) along with the low level inference, human meta-data and the domain knowledge to provide useful and actionable insights for longitudinal tracking, prediction, and anomaly detection, wherein the longitudinal analysis technique is selected based on expectation

maximization techniques; and

obtaining domain adaptable human behaviour inference using a unified platform based on the obtained low level inference and the high level inference, wherein the unified platform provides a unified low level inference and high level inference of the domain adaptable human behaviour inference across multiple domains.

8. The one or more non-transitory machine readable information storage mediums of claim 7, wherein the plurality of personal sensors includes wearable, infrastructure sensors that includes sensors embedded in infrastructures, near field sensors that include low-power ultrasound sensors, passive radio-frequency identification (RFID), infrared sensors, near-field communication (NFC) sensors and soft sensors that include databases with exhaustive details regarding the users.

9. The one or more non-transitory machine readable information storage mediums of claim 7, wherein processing the received sensor data to the standard format comprises time series format using linear, non-linear interpolation and phase removing filters.

10. The one or more non-transitory machine readable information storage mediums of claim 7, wherein Fourier analysis techniques is performed using sliding window to identify shift in frequency domain.

11. The one or more non-transitory machine readable information storage mediums of claim 7, wherein obtained human behaviour inference is displayed on a unified display module based on a user query.