CLAIMS

1. A portable navigation method for provision of personalized navigation indications to a user in a GPS-denied environment, the method comprising:
   a. activating a navigation Application (App) provides the user with navigational indications associated with a two-dimensional or three-dimensional route in the GPS-denied environment, responsive to at least one of a current position of at least one device carried by said user; and a personalized profile of said user, wherein the App includes an embedded algorithm adapted to fragment a continuous line course on a map associated with said two-dimensional or three-dimensional route, the algorithm constructed to provide instructions to the user, responsive to a current position of the at least one device associated with the route, and wherein the at least one device is adapted to provide commands from the algorithm to activate at least one interface components, responsive to a position of the at least one device; and
   b. instructing at least one direction-specific instruction from said at least one interface components of movement to the user; and
   c. updating said user in real-time responsive to a deviation of said user from said route.
2. A method according to claim 1, further comprising providing said indications and instructions in terrain and off-road routes in said GPS-denied environment.
3. A method according to claim 2, wherein said instructing step is performed by said at least one device, disposed in an anterior central position on a body of said user and wherein said at least one device comprises at least one of a computerized device, portable phone, an armband device, a heads-up device, a smart glasses device, a cell phone, a smart watch, smart glasses, a heads up display (HUD), an optical apparatus, binoculars, camera equipment, a smart phone, a tablet, a laptop computer, a mobile communication apparatus, a portable communication apparatus, a radio phone and an army phone and combinations thereof.
4. A method according to claim 3, further comprising:
   a. correcting erroneous data generated by sensors in said at least one device;

b. detecting at least one of:
    i. orientation changes performed by the user;
    ii. an angle falling within a predefined angle range;
    iii. a distance falling within a predefined distance range:
    iv. changes in tempo of movement selected from slow walking, walking, jogging, running and combinations thereof; and

c. integrating these changes into measurements.

5. A portable navigation method according to claim 4, further providing a precise location to said user on at least one of a trek, where there is a pre-planned route, a free route/roaming trek, a 2-dimensional navigation, a 3-dimensional navigation, and combinations thereof.

6. A method according to claim 5, further comprising providing continuously or semi-continuously:
    i. corrected faulty measurements of said at least one sensor;
    ii. detected changes in a stride length of said user;
    iii. detected changes in an orientation of said user;
    iv. detected changes in a performance of said user; and
    v. detected change in a tempo of movement of said user,
    thereby continuously or semi-continuously updating said user location.

7. A method according to claim 6, further providing real-time personalized feedback and instructions to said user to minimize user deviation from said route, and wherein said user is selected from a human and a dog.

8. A method according to claim 7, wherein said personalized feedback and said instructions are responsive to:

a. a speed of said user;

b. a movement type of said user; and wherein
said personalized feedback calculated by tracking said user in a motion, selected from walking, slow motion, jogging, running, driving, diving, swimming and combinations thereof.

9. A method according to claim 8, further comprising comparing real-time data associated with a real-time location of the at least one device with an anticipated location of the at least one device to provide the user with

updated real-time instructions, responsive to said real-time data and said anticipated location.

10. A portable navigation method according to claim 1, further comprising segmenting a continuous-line course from a starting waypoint to a destination waypoint via a continuous line route, into a fragmented, straight, clear, bearings stretched between clear waypoints, to provide the user with easy following of azimuths between the waypoints.

11. A method according to claim 1, further comprising storing a personalized profile of said user and optionally storing multiple user profiles.

12. A hands-free method for provision of navigation indications to a user in a GPS-denied environment, the method comprising:

    i. providing the user with navigational instructions; and
    ii. instructing at least one direction-specific tactile instruction of movement to the user; and
    iii. fragmenting a continuous line course on a map associated with a two or three-dimensional route, thereby providing real-time instructions to said user in an anterior central position of a body of said user, responsive to a current position of said user on said route; and optionally
    iv. updating said instructions responsive to a deviation of said user from said route in real-time, and providing the user with a distance, a direction, and a description of a next way point, thereby enabling said user to reach a last waypoint of said route without GPS-navigation.

13. A method according to claim 12, enabling improved user navigation accuracy by enabling said user to name waypoints with descriptive names and to upload said names to said App and for said App to check if said descriptive names are on said route.

14. A method for provision of personalized navigation indications to a user roaming in a GPS-denied environment, the method comprising:

    i. providing a user with personalized navigational instructions responsive to at least one of a current position of said user; and a personalized profile of said user; and

ii. instructing at least one direction-specific instruction of movement to the user; and

iii. applying a non-GPS roaming algorithm, the algorithm constructed to provide instructions to said user, responsive to a current position of at least one device, wherein said at least one device is adapted to provide commands from said algorithm to activate at least one interface components, responsive to a position of said at least one device, and wherein said non-GPS roaming algorithm is configured to provide a real-time location definition of a user device within 100 meters, 50 meters, 10 meters, 5 meters, 1 meter or within 20 cm of a correct map position.

15. A method according to claim 14, which enables vehicle navigation without GPS, independent of external indications from an external information source, the method comprising:

a. monitoring vehicle speed with a vehicle speed sensor ;

i. providing said with navigational indications associated with said route from a navigational App,

b. fragmenting said route of said user, to reduce deviation, errors and mistakes on the route of the user, and further segmenting a continuous line course to straight, clear, bearings between waypoints and thus to enable the user easy following of azimuths (bearings) between waypoints, and to provide the user with heading instructions;

wherein said App is constructed to provide navigation indications to said user in real-time, and to receive real-time data from said vehicle speed sensor responsive to a current position of said device associated with said route, and wherein said App is configured to update said at least one of said navigation indications responsive to a deviation of said user from said route in real-time, and further wherein said App supports terrain maps and off-road routes, and wherein said vehicle is selected from a car, boat, tank a car, motorcycle, autonomous/robotic vehicle, an army vehicle, bicycle, speedboat, or any other vehicle.