

[0011a] In one aspect, there is provided a method for assessing sympathetic and/or parasympathetic neural activity in an eye of a subject comprising: taking a plurality of images of the eye over a period of time; identifying and tracking a position of one or more features of an iris of the eye across the images to generate one or more trajectories thereof; and analyzing the trajectories to generate one or more metrics relating to sympathetic and/or parasympathetic neural activity in the eye.

[0011b] In one aspect, there is provided a system for monitoring one or more physiologic signals, autonomic neural signals, and/or electrophysiological signals from a subject, comprising: a head mounted display sized for placement onto a head of the subject comprising a visual input device and a back-facing imaging sensor; the visual input device arranged within a field of view of the subject when the head mounted display is coupled thereto, the visual input device configured to display an output image for the subject; the back-facing imaging sensor arranged with a field of view covering one or more facial features of the subject when the head mounted display is coupled thereto, the back-facing imaging sensor configured to generate one or more feedback images the subject; and a processor electrically coupled and/or wirelessly coupled to the visual input device and the back-facing imaging sensor, the processor configured to deliver the output images, accept the feedback images, and analyze the images to determine one or more of the physiologic, autonomic neural, and/or electrophysiological signals.

[0011c] In one aspect, there is provided a system for performing a neuromodulation procedure and/or ablation procedure on a target site within a subject comprising: a treatment system for delivering energy or a chemical to the target site; a head mounted display including a back-facing imaging sensor configured to measure one or more electrophysiological signals, neural traffic signals, and/or physiologic parameters from the head of the subject so as to produce one or more activity signals; and a processor comprised in or coupled to the head mounted display, the processor configured to receive the activity signal(s), and/or one or more signals generated therefrom, the processor comprising an algorithm, the algorithm configured to analyze the activity signal(s) to determine the effect of the treatment system on the target site.

[0012] According to one aspect there is provided a system for monitoring one or more physiologic and/or physical signals from a subject including one or more patches each in accordance with the present disclosure configured for attachment to the subject, and one or more modules each in accordance with the present disclosure

[0013] configured and dimensioned to mate with a corresponding patch, and to interface with the subject there through. In aspects, one or more of the modules may be configured to convey and/or store one or more physiologic and/or physical signals, a signal derived therefrom, and/or a metric derived therefrom obtained via the interface with the subject.

[0014] In aspects, the system may include or interface with a host device in accordance with the present disclosure coupled in wireless communication with one or more of the modules configured to receive one or more of the signals and/or metrics therefrom. In aspects, the host device may include features for recharging and/or performing diagnostic tests on one or more of the modules.

[0015] According to aspects there is provided, use of a system in accordance with the present disclosure to monitor a subject, to monitor an electrocardiogram of a subject, to perform one or more tasks in accordance with the present disclosure, etc.

[0016] According to aspects there is provided an interface (i.e. a patch in accordance with the present disclosure) for monitoring a physiologic and/or physical signal from a subject, including a substrate, an adhesive coupled to the substrate formulated for attachment to the skin of a subject, and one or more sensors and/or electrodes each in accordance with the present disclosure coupled to the substrate, arranged, configured, and dimensioned to interface with the subject.

[0017] In aspects, the substrate may be formed from an elastic or polymeric material and the patch is configured to maintain operation when stretched to more than 25%, more than 50%, or more than 80%.

[0018] In aspects, the interface (i.e. the patch) may be configured with a moisture vapor transmission rate of between 200 grams/square meter (g/m^2)/24 hours (hrs) and 20,000 g/m^2 /24hrs, between 500 g/m^2 /24hrs and 12,000 g/m^2 /24hrs, or between 2,000 g/m^2 /24hrs and 8,000 g/m^2 /24hrs, etc.

[0019] In aspects, the interface may be used for a range of applications, some non-limiting examples of which include electrocardiography, sleep assessment,

WHAT IS CLAIMED IS:

1. A method for assessing sympathetic and/or parasympathetic neural activity in an eye of a subject comprising:
 - taking a plurality of images of the eye over a period of time;
 - identifying and tracking a position of one or more features of an iris of the eye across the images to generate one or more trajectories thereof; and
 - analyzing the trajectories to generate one or more metrics relating to sympathetic and/or parasympathetic neural activity in the eye.
2. The method in accordance with claim 1, wherein the one or more features of the iris comprise one or more of a ciliary zone, a pupil, a sphincter muscle/pupillary zone, a crypt, a peripheral crypt, a contraction furrow, a mole, a region of alternative/distinct color, a color distorted region, a region of contrast, an identifiable region, a diameter, boundary, centroid, area, distortion, or combination thereof.
3. The method in accordance with claim 1, wherein the position of one or more of the features is calculated relative to a reference point in the plurality of images, the reference point being substantially the center of a pupil of the eye.
4. The method in accordance with claim 3, wherein the one or more trajectories comprise a radial movement and/or a rotational movement about the reference point.
5. The method in accordance with claim 1, further comprising altering a light field near to one or more of the features in one or more of the plurality of images, wherein altering the light field occurs over an optical spectrum visible in the images but without substantially impacting a light reflex of the eye.
6. The method in accordance with claim 1, further comprising administering a medicament to the eye so as to affect a parasympathetic muscular response and/or a sympathetic muscular response thereof, the medicament comprising an anticholinergic agent, an alpha andrenergic agent, a muscarinic receptor agonist, and/or a sympathomimetic agent.
7. The method in accordance with claim 1, further comprising performing a stress test on the subject before and/or during the tracking, the metric related to a subject response to the stress test.
8. The method in accordance with claim 1, further comprising:

treating a target site within the patient, the metric related to a subject response to the treatment; and

administering a subsequent treatment and/or stress test to the target site, the metric during and/or after the subsequent treatment and/or stress test indicative of a state of completion of the treatment of the target site.

9. A system for monitoring one or more physiologic signals, autonomic neural signals, and/or electrophysiological signals from a subject, comprising:

a head mounted display sized for placement onto a head of the subject comprising a visual input device and a back-facing imaging sensor;

the visual input device arranged within a field of view of the subject when the head mounted display is coupled thereto, the visual input device configured to display an output image for the subject;

the back-facing imaging sensor arranged with a field of view covering one or more facial features of the subject when the head mounted display is coupled thereto, the back-facing imaging sensor configured to generate one or more feedback images the subject; and

a processor electrically coupled and/or wirelessly coupled to the visual input device and the back-facing imaging sensor, the processor configured to deliver the output images, accept the feedback images, and analyze the images to determine one or more of the physiologic, autonomic neural, and/or electrophysiological signals.

10. The system in accordance with claim 9, wherein the head mounted display comprises a shroud, the shroud arranged so as to isolate one or more eyes of the subject from a surrounding environment, when the head mounted display is coupled to the head of the subject.

11. The system in accordance with claim 10, wherein the shroud comprises one or more sensors and/or electrodes, the sensors and/or electrodes arranged along the shroud so as to bias against one or more skin sites of the subject when the head mounted display is coupled to the head of the subject, the processor coupled to the sensors and/or electrodes.

12. The system in accordance with claim 9, wherein the visual input device is configured to alter a light field near to one or more of the facial features via an output image, the back-facing imaging sensor configured to capture one or more aspects of the light field in a feedback image.

13. The system in accordance with claim 9, wherein one or more of the facial features is an iris, the back-facing imaging sensor configured to image the iris with a pixel count across the diameter of the iris of more than 50 pixels, more than 100 pixels, more than 200 pixels, or more than 400 pixels, the processor comprising an algorithm configured to track one or more features of the iris.

14. The system in accordance with claim 9, wherein the back-facing imaging sensor is configured to take more than 10 images per second, more than 20 images per second, more than 40 images per second, or more than 80 images per second.

15. The system in accordance with claim 9, wherein the head mounted display comprises a plurality of visual feedback devices, and/or a plurality of back-facing imaging sensors.

16. The system in accordance with claim 9, wherein the head mounted display comprises one or more audio input devices, arranged so as to interface with the ears of the subject when the head mounted display is coupled to the head of the subject, the audio input devices coupled to the processor, the audio input devices configured to render an audio stream provided by the processor.

17. The system in accordance with claim 9, wherein the head mounted display comprises one or more optical sensors arranged so as to bias against one or more skin sites of the subject when the head mounted display is coupled to the head of the subject, the processor coupled to the optical sensors to receive one or more hemodynamic and/or tissue analyte signals.

18. The system in accordance with claim 9, further comprising one or more physiologic sensors coupled to the body of the subject to produce one or more physiologic signals therefrom, each of the physiologic sensors in wireless communication with the processor to provide the physiologic signals thereto.

19. The system in accordance with claim 9, further comprising a treatment system for treating a target site within the subject, the treatment system including one or more of an ablation system, a neuromodulation device, a neuromodulation implant, an ablation catheter, a focused energy delivery device, a radio frequency ablation system or catheter, a microwave ablation system or catheter, an ultrasound energy delivery system, a high intensity focused ultrasound [HIFU] delivery system or catheter, a cryoablation system or catheter, a chemical ablation

system or catheter, a radiosurgical system, an optical ablation system, an infrared ablation system, a laser ablation system, or an MR guided HIFU system.

20. The system in accordance with claim 9, further comprising a vascular substance delivery device, configured so as to administer a substance to an artery, a vein, an arteriole, and/or a venule of the subject.

21. The system in accordance with claim 9, wherein the processor is comprised in or coupled to a host device, the host device integrated into a bedside alarm clock, housed in an accessory, within a purse, a backpack, a wallet, is or is included in a mobile computing device, a smartphone, a tablet computer, a pager, a laptop, a local router, a data recorder, a network hub, a server, a secondary mobile computing device, a repeater, or a combination thereof.

22. A system for performing a neuromodulation procedure and/or ablation procedure on a target site within a subject comprising:

- a treatment system for delivering energy or a chemical to the target site;

- a head mounted display including a back-facing imaging sensor configured to measure one or more electrophysiological signals, neural traffic signals, and/or physiologic parameters from the head of the subject so as to produce one or more activity signals; and

- a processor comprised in or coupled to the head mounted display, the processor configured to receive the activity signal(s), and/or one or more signals generated therefrom, the processor comprising an algorithm, the algorithm configured to analyze the activity signal(s) to determine the effect of the treatment system on the target site.

23. The system in accordance with claim 22, wherein the algorithm is configured to compare activity signal(s) generated by the head mounted display and/or one or more additional monitoring devices against each other to determine the effect of the treatment system on the target site.

24. The system in accordance with claim 22, wherein the algorithm is configured to indicate when only a partial neuromodulation procedure and/or ablation procedure has been performed on a target site, and/or when a complete procedure has been performed on the target site.

25. The system in accordance with claim 22, further comprising a stimulating device selected from an electrical stimulator, a thermoregulating device, a heating coil, a thermoelectric device, a Peltier device, a tactile stimulating component, a vibratory stimulating element, or a

combination thereof, the stimulating device configured to stimulate the subject at one or more stimulation sites, the algorithm configured to compensate for the stimulation in the analysis.