CLAIMS

1. A method comprising:

receiving distinct electrical signals generated based on a body part;

generating a plurality of extracted features based on the distinct electrical signals;

identify clinically relevant features from the plurality of extracted features, wherein the clinically relevant features meet a threshold determined based on a clinical outcome; and,

applying the clinically relevant features to determine a clinical outcome result.

2. The method of claim 1, wherein the clinical outcome result is one of a diagnosis or a treatment plan.

3. The method of claim 1, wherein the distinct electrical signals are generated based on a body electrical signal generated by the body part, a movement of the body part, or a property of the body part.

4. The method of claim 1, wherein the plurality of extracted features are based on one or more of amplitude features, zero crossing rate, standard deviation, variance, root mean square, kurtosis, frequency, bandpower, or skew.

5. The method of claim 1, wherein the distinct electrical signals are generated by a wearable device comprising sensors, wherein the wearable device is configured to output a mixed signal, and wherein a signal separation module extracts the extracted features from the mixed signal.

6. The method of claim 5, wherein the signal separation module applies one or more of blind signal separation, blind source separation, discrete transform, Fourier transform, integral transform, two-sided Laplace transform, Mellin transform, Hartley transform, Short-time Fourier transform (or short-term Fourier transform) (STFT), rectangular mask short-time Fourier transform, Chirplet transform, Fractional Fourier transform (FRFT), Hankel

transform, Fourier–Bros–Iagolnitzer transform, or linear canonical transform to extract the extracted features from the mixed signal.

7. The method of claim 1, wherein a random forest algorithm is used to score the extracted features.

8. The method of claim 7, wherein the threshold is a random forest threshold and wherein extracted features having a random forest score at or above the random forest threshold are identified as clinically relevant features.

9. The method of claim 1, wherein the threshold is a reliability threshold and wherein extracted features having a reliability score at or above a reliability threshold are identified as clinically relevant features.

10. The method of claim 9, wherein the reliability score is based on one or more of a spearman correlation, intraclass correlation (ICC), covariance (CV), area under a curve (AUC), clustering, or Z score.

11. A system comprising:

a wearable device including a plurality of sensors;

a processor;

a computer-readable data storage device storing instructions that, when executed by the processor, cause the system to:

obtain electrical activity information of a subject from the wearable device, the electrical activity detected by the plurality of sensors; and

identify clinically relevant features based on the electrical activity information.

12. The system of claim 11, further configured to:

classify the clinically relevant features as one or more maladies; and

determine a disease of the subject based on the one or more maladies.

13. The system of claim 12, wherein the system is further configured to:
determine a scope of the disease; and
determine a treatment plan based on the scope of the disease.

14. The system of claim 11, wherein the plurality of sensors comprise an electroencephalography (EEG) sensor, an electrooculography (EOG) sensor, an electromyography (EMG) sensor, an image sensor, or an eye-tracking sensor.

15. The system of claim 11, wherein the clinically relevant features are identified using a machine-learning algorithm.