WHAT IS CLAIMED IS:

1. A system for detecting strokes, comprising:

a processor;

a first ultrasound transmitter located on a patient's head in communication with the processor;

a first ultrasound receiver located on the patient's head in communication with the processor;

a memory in communication with the processor, comprising a stroke diagnostics application, where the stroke diagnostics application directs the processor to:

transmit a first ultrasound signal from the first ultrasound transmitter across a patient's brain, the brain comprising a first hemisphere and a second hemisphere;

receive the first ultrasound signal using the first ultrasound receiver, where the ultrasound signal is affected during transit by harmonics generated by microbubbles in the blood of the patient stimulated by the first ultrasound signal;

detect that a stroke has occurred based on the harmonic effects on the first received ultrasound signal;

time-box the received ultrasound signal to reflect spatial segments of the brain;

determine which spatial segment contains harmonic effects indicating injury; and

locate the position of the detected stroke within the brain.

2. The system for detecting strokes of claim 1, wherein the stroke diagnostics application further directs the processor to:

compare the portion of the received ultrasound signal corresponding to the first hemisphere of the brain to the portion of the ultrasound signal corresponding to the second hemisphere of the brain; and

detect differences in microbubble signal profile between the first hemisphere and the second hemisphere based on the harmonic effects on the first received ultrasound signal.

3. The system for detecting strokes of claim 1, wherein the first ultrasound receiver is located on the patient's head ipsilaterally with respect to the first ultrasound transmitter; and

wherein the stroke diagnostics application further directs the processor to:

transmit a second ultrasound signal from a second ultrasound transmitter across the patient's brain, where the second ultrasound transducer is in communication with the processor and is located contralaterally on the patient's head with respect to the first ultrasound transmitter; and

receive the second ultrasound signal using a second ultrasound receiver, where the second ultrasound receiver is located ipsilaterally on the patient's head with respect to the second ultrasound transmitter, where the second ultrasound receiver is in communication with the processor, and where the second ultrasound signal is affected during transit by harmonics generated by microbubbles in the blood of the patient stimulated by the second ultrasound signal.

4. The system for detecting strokes of claim 3, wherein the stroke diagnostics application further directs the processor to:

determine the transmit time of ultrasound across the patient's head;

time-box the first received ultrasound signal such that the first time-boxed signal corresponds to the signal received during a time period of half of the determined transmit time so that the first time-boxed signal describes the first hemisphere of the brain;

time-box the second received ultrasound signal such that the second time-boxed signal corresponds to the signal received during a time period of half of the determined transmit time so that the second time-boxed signal describes the second hemisphere of the brain; and

compare the first time-boxed signal and the second time-boxed signal for differences in harmonic responses.

5. The system for detecting strokes of claim 1, wherein the first ultrasound is located contralaterally on the patient's head with respect to the first ultrasound transmitter; and

wherein the stroke diagnostics application further directs the processor to:

transmit a second ultrasound signal from the second ultrasound transmitter across the patient's brain, where the second ultrasound transmitter is located contralaterally on the patient's head with respect to the first ultrasound transmitter; and

receive the second ultrasound signal using a second ultrasound receiver, where the second ultrasound receiver is located contralaterally on the patient's head with respect to the first ultrasound transmitter, where the second ultrasound receiver is in

communication with the processor, and where the second ultrasound signal is affected during transit by harmonics generated by microbubbles in the blood of the patient stimulated by the second ultrasound signal.

6. The system for detecting stokes of claim 1, wherein the stroke diagnostics application further directs the processor to:

analyze a first segment of the received ultrasound signal corresponding to the distance from the first ultrasound transmitter to a predetermined segment distance from the first ultrasound transmitter; and

analyze a set of subsequent segments, where each subsequent segment in the set of subsequent segments sequentially describes the received ultrasound signal from the first ultrasound transmitter to a distance that is one more predetermined segment distance away from the first ultrasound transmitter than the previous segment.

7. The system of claim 1, wherein the stroke diagnostics application further directs the processor to determine whether the stroke is an ischemic stroke or a hemorrhagic stroke based on the received ultrasound signal.

8. The system of claim 7, wherein the microbubbles generate different harmonic frequencies depending on the pressure that the microbubbles are subject to; and

wherein the stroke diagnostics application further directs the processor to:

measure the frequencies associated with the microbubble harmonic effects; and

calculate an intracranial pressure of the patient based on the measured frequencies;

determine a type of stroke based on the intracranial pressure.

9. The system of claim 1, wherein the received first ultrasound signal is further affected by unwanted harmonic noise; and the stroke detection application further directs the processor to reduce unwanted harmonic noise by:

transmitting a second ultrasound signal using the first ultrasound transmitter, where the second ultrasound signal is 180 degrees out of phase with the first transmitted ultrasound signal; and

filter the first ultrasound signal to remove unwanted harmonic noise, where the unwanted harmonic noise is correlated to phase.

10. The system of claim 1, wherein the received first ultrasound signal comprises a first peak and a second peak, where the received first ultrasound signal's first peak and second peak correspond to harmonic effects; and wherein the stroke detection application further directs the processor to:

locate the first received ultrasound signal's first peak by finding a first inflection point in the received first ultrasound signal;

locate the first received ultrasound signal's second peak by finding a second inflection point in the received first ultrasound signal; and

match the pattern of the peaks in the first received ultrasound signal to predetermined patterns of peaks representing brains suffering from stroke.

11. The system of claim 10, wherein the stroke detection application further directs the processor to:

transmit a second ultrasound signal using a second ultrasound transmitter, where the second ultrasound transmitter is located on the patient's head contralaterally with respect to the first ultrasound transmitter, and where the second ultrasound transmitter is in communication with the processor;

receive the second ultrasound signal using at least one of the first ultrasound receiver and a second ultrasound receiver, where the second ultrasound receiver is located on the patient's head contralaterally with respect to the first ultrasound receiver, where the second received ultrasound signal comprises a first peak and a second peak, and where the second ultrasound signal's first peak and second peak correspond to harmonic effects;

locate the second received ultrasound signal's first peak by finding a first inflection point in the received first ultrasound signal;

locate the second received ultrasound signal's second peak by finding a second inflection point in the received first ultrasound signal;

calculate the differences between the first received ultrasound signal's peaks with the second received ultrasound signal's peaks; and

detect if a stroke has occurred based on the calculated differences.

12. The system of claim 1, wherein a first ultrasound transducer assembly comprises the first ultrasound transmitter and the first ultrasound receiver.

13. The system of claim 12, wherein the first ultrasound transducer assembly comprises a coaxial dual element ultrasound transducer.

14. A method for detecting strokes, comprising:

transmitting a first ultrasound signal from a first ultrasound transmitter across a patient's brain, where the brain comprises:

a first hemisphere; and

a second hemisphere; and

receiving the first ultrasound signal using a first ultrasound receiver, where the ultrasound signal is affected during transit by harmonics generated by microbubbles in the blood of the patient stimulated by the first ultrasound signal;

detecting that a stroke has occurred based on the harmonic effects on the first received ultrasound signal;

time-boxing the received ultrasound signal to reflect spatial segments of the brain;

determining which spatial segment contains harmonic effects indicating injury; and

locating the position of the detected stroke within the brain.

15. The method for detecting strokes of claim 14, wherein detecting if a stroke has occurred further comprises

comparing the portion of the received ultrasound signal corresponding to the first hemisphere of the brain to the portion of the ultrasound signal corresponding to the second hemisphere of the brain; and

detecting differences in microbubble signal profile between the first hemisphere and the second hemisphere based on the harmonic effects on the first received ultrasound signal.

16. The method for detecting strokes of claim 14, wherein the first ultrasound receiver is located on the patient's head ipsilaterally with respect to the first ultrasound transmitter; and further comprising:

transmitting a second ultrasound signal using a second ultrasound transmitter across the patient's brain, where the second ultrasound transmitter is located on the patient's head contralaterally with respect to the first ultrasound transmitter; and

receiving the second ultrasound signal using a second ultrasound receiver, where the second ultrasound receiver is located on the patient's head contralaterally with respect to the first ultrasound transmitter, and where the second ultrasound signal is affected during transit by harmonics generated by microbubbles in the blood of the patient stimulated by the second ultrasound signal; and

detecting if a stroke has occurred is further based on the harmonic effects on the second received ultrasound signal.

17. The method for detecting strokes of claim 16 further comprising:

determining the transit time of ultrasound across the patient's head;

time-boxing the first received ultrasound signal such that the first time-boxed signal corresponds to the signal received during a time period of half of the determined transmit time so that the first time-boxed signal describes the first hemisphere of the brain;

time-boxing the second received ultrasound signal such that the second time-boxed signal corresponds to the signal received during a time period of half of the determined transmit time so that the second time-boxed signal describes the second hemisphere of the brain; and

comparing the first time-boxed signal and the second time-boxed signal for differences in harmonic responses.

18. The method for detecting strokes of claim 14, wherein the first ultrasound receiver is located on the patient's head contralaterally with respect to the first ultrasound transmitter; and further comprising:

transmitting a second ultrasound signal from a second ultrasound transmitter across the patient's brain, where the second ultrasound transmitter is located on the patient's head contralaterally with respect to the first ultrasound transmitter;

receiving the second ultrasound signal using a second ultrasound receiver, where the second ultrasound receiver is located on the patient's head ipsilaterally with respect to the first ultrasound transmitter, and where the second ultrasound signal is affected during transit by harmonics generated by microbubbles in the blood of the patient stimulated by the second ultrasound signal; and

detecting if a stroke has occurred is further based on the harmonic effects on the second received ultrasound signal.

19. The method for detecting strokes of claim 14, wherein time-boxing the received ultrasound signal comprises:

analyzing a first segment of the received ultrasound signal corresponding to the distance from the first ultrasound transducer assembly to a predetermined segment distance from the of the first ultrasound transmitter; and

analyzing a set of subsequent segments, where each subsequent segment in the set of subsequent segments sequentially describes the received ultrasound signal from the first ultrasound transducer assembly to a distance that is one more predetermined segment distance away from the first ultrasound transducer assembly than the previous segment.

20. The method for detecting strokes of claim 14, further comprising determining whether the stroke is an ischemic stroke or a hemorrhagic stroke based on the received ultrasound signal.

21. The method for detecting strokes of claim 20, wherein the microbubbles generate different harmonic frequencies depending on the pressure that the microbubbles are subject to; and

wherein determining whether the stroke is a hemorrhagic stroke or an ischemic stroke comprises:

measuring the frequencies associated with the microbubble harmonic effects; and

calculating an intracranial pressure of the patient based on the measured frequencies;

determining a type of stroke based on the intracranial pressure.

22. The method for detecting strokes of claim 14, wherein the received first ultrasound signal is further affected by unwanted harmonic noise; and

reducing unwanted harmonic noise comprises:

transmitting a second ultrasound signal using the first ultrasound transmitter assembly, where the second ultrasound signal is 180 degrees out of phase with the first transmitted ultrasound signal; and

filtering the first ultrasound signal to remove unwanted harmonic noise, where the unwanted harmonic noise is correlated to phase.

23. The method for detecting strokes of claim 14, wherein the received first ultrasound signal comprises a first peak and a second peak, where the received first ultrasound signal's first peak and second peak correspond to harmonic effects; and wherein detecting if a stroke has occurred comprises:

locating the first received ultrasound signal's first peak by finding a first inflection point in the received first ultrasound signal;

locating the first received ultrasound signal's second peak by finding a second inflection point in the received first ultrasound signal; and

matching the pattern of the peaks in the first received ultrasound signal to predetermined patterns of peaks representing brains suffering from stroke.

24. The method for detecting strokes of claim 23 further comprising:

transmitting a second ultrasound signal using a second ultrasound transmitter;

receiving the second ultrasound signal using at least one of the first ultrasound receiver and a second ultrasound receiver, where the second received ultrasound signal comprises a first peak and a second peak, where the second ultrasound signal's first peak and second peak correspond to harmonic effects;

locating the second received ultrasound signal's first peak by finding a first inflection point in the received first ultrasound signal;

locating the second received ultrasound signal's second peak by finding a second inflection point in the received first ultrasound signal;

calculating the differences between the first received ultrasound signal's peaks with the second received ultrasound signal's peaks; and

detecting whether a stroke has occurred based on the calculated differences.