CLAIMS

We claim:

1. A computing device, comprising at least one processor and at least one memory comprising instructions that, when executed by the at least one processor, cause the computing device to perform operations comprising:

receiving a first blood pressure value and a subsequent second blood pressure value;

receiving a first systemic vascular resistance (SVR) value and a subsequent second SVR value;

determining a change in blood pressure based on the first blood pressure value and the second blood pressure value;

determining a change in SVR based on the first SVR value and the second SVR value;

determining a pacing rate based on the change in blood pressure and the change in SVR;

providing a first initial micro-interval pacing rate based on the pacing rate;

receiving a third blood pressure value and a third SVR value in response to providing the first initial micro-interval pacing rate;

providing the third blood pressure value and third SVR to an artificial intelligence module trained to output a patient blood pressure category, wherein the artificial intelligence module is trained based on historical patient blood pressure data;

receiving an artificial intelligence module output from the artificial intelligence module, the artificial intelligence module output comprising a patient blood pressure category; and

determining a pacing action based on the patient blood pressure category.

2. The computing device of claim 1, wherein determining the pacing rate is in response to identifying an adverse event based on the change in blood pressure and the change in SVR.

3. The computing device of claim 2, wherein identifying the adverse event comprises one of:

identifying a drop in blood pressure based on the change in blood pressure and identifying a rise in SVR based on the change in SVR;

identifying an increase in blood pressure based on the change in blood pressure and identifying the rise in SVR;

identifying a drop in blood pressure below a minimum blood pressure and identifying a stable SVR based on the change in SVR; or

identifying the increase in blood pressure and identifying the stable SVR.

4. The computing device of any of claims 1-3, wherein a micro-interval of the first initial micro-interval pacing rate is a fraction of the pacing rate.

5. The computing device of any of claims 1-4, wherein the patient blood pressure category is selected from one of a decrease in blood pressure by a successful amount, a decrease in blood pressure by an unacceptable amount, or a stable blood pressure.

6. The computing device of claim 5, wherein the determining the pacing action based on the patient blood pressure category being the decrease in blood pressure by a successful amount comprises:

receiving a third SVR; and

determining the pacing action is one of suspending the operations based on the third SVR meeting a target SVR, providing a second initial micro-interval pacing rate based on the third SVR not meeting the target SVR.

7. The computing device any of claims 5-6, wherein the pacing action based on the patient blood pressure category being the decrease in blood pressure by an unacceptable amount comprises suspending the operations.

8. The computing device of any of claims 5-7, wherein determining the pacing action based on the patient blood pressure category being the stable blood pressure comprises:

receiving a third SVR; and

determining the pacing action is providing an updated micro-interval pacing rate based on the third SVR indicating a stable SVR.

9. The computing device of claim 8, wherein the updated micro-interval pacing rate is greater than the first initial micro-interval pacing rate.

10. A method for cardiac pacing, the method comprising:

receiving a first blood pressure value and a subsequent second blood pressure value;

receiving a first systemic vascular resistance (SVR) value and a subsequent second SVR value;

determining a change in blood pressure based on the first blood pressure value and the second blood pressure value;

determining a change in SVR based on the first SVR value and the second SVR value;

determining a pacing rate based on the change in blood pressure and the change in SVR;

providing a first initial micro-interval pacing rate based on the pacing rate;

receiving a third blood pressure value and a third SVR value in response to providing the first initial micro-interval pacing rate;

providing the third blood pressure value and third SVR to an artificial intelligence module trained to output a patient blood pressure category, wherein the artificial intelligence module is trained based on historical patient blood pressure data;

receiving an artificial intelligence module output from the artificial intelligence module, the artificial intelligence module output comprising a patient blood pressure category; and

determining a pacing action based on the patient blood pressure category.

11. The method of claim 10, wherein the patient blood pressure category is selected from one of a decrease in blood pressure by a successful amount, a decrease in blood pressure by an unacceptable amount, or a stable blood pressure.

12. The method of any of claims 10-11, wherein the determining the pacing action based on the patient blood pressure category being the decrease in blood pressure by a successful amount comprises:

receiving a third SVR; and

determining the pacing action is one of suspending the cardiac pacing based on the third SVR meeting a target SVR, providing a second initial micro-interval pacing rate based on the third SVR not meeting the target SVR.

13. The method of any of claims 10-12, wherein the pacing action based on the patient blood pressure category being the decrease in blood pressure by an unacceptable amount comprises deactivating the cardiac pacing.

14. The method of any of claims 10-13, wherein determining the pacing action based on the patient blood pressure category being the stable blood pressure comprises:

receiving a third SVR; and

determining the pacing action is providing an updated micro-interval pacing rate based on the third SVR indicating a stable SVR.

15. A method for cardiac pacing, the method comprising:

receiving a blood pressure baseline for treatment (BAT);

receiving a blood pressure treatment goal;

determining a pacing rate based on the blood pressure BAT and blood pressure treatment goal;

providing a initial micro-interval pacing rate based on the pacing rate;

receiving a detected blood pressure value in response to providing the initial micro-interval pacing rate;

determining that the detected blood pressure value is a confident detected value based on an output of an artificial intelligence model, the artificial intelligence model being trained based on the blood pressure BAT;

determining that the detected blood pressure value is an unacceptable blood pressure value in response to determining that detected blood pressure value is the confident detected value; and

providing an updated micro-interval pacing rate based on the pacing rate, the updated micro-interval pacing rate being greater than the initial micro-interval pacing rate.

16. The method of claim 15, wherein the initial micro-interval pacing rate is a first fraction of the pacing rate and the updated micro-interval pacing rate is a second fraction of the pacing rate, the first fraction being smaller than the second fraction.

17. The method of any of claims 15-16, wherein the blood pressure BAT comprises time of day based blood pressure values and wherein determining that the detected blood pressure value is a confident detected value comprises:

receiving, by the artificial intelligence model, a time of day;

comparing, by the artificial intelligence model, the detected blood pressure value to a time of day specific blood pressure BAT value; and

generating the output of the artificial intelligence model based on comparing the detected blood pressure value to the time of day specific blood pressure BAT value.