What is claimed is:

1. A blood pump system, the system comprising:

a catheter having proximal and distal ends;

a blood pump having a motor coupled to the catheter, wherein the motor has a motor current:

an optical fiber sensor configured to detect an optical signal during pumping operation of the blood pump;

an optical fiber configured to transmit the optical signal from the optical fiber sensor to an evaluation device communicatively coupled to the optical fiber sensor,

wherein the evaluation device is configured to:

receive as inputs the transmitted optical signal and a signal indicative of the motor current,

calculate a signal to noise ratio (SNR) of the optical signal, receive a predetermined threshold for SNR,

compare the calculated SNR to the predetermined threshold, and

determine a mechanical failure event associated with the blood pump: and

wherein the mechanical failure event associated with the blood pump is determined by the evaluation device to have occurred when, over a time period:

(1) the motor current is greater than zero, and

(2) an increase in the calculated SNR in the time period exceeds the predetermined threshold.

2. The blood pump system of claim 1, wherein the evaluation device is configured to generate and output, in response to determining the mechanical failure event, an indicator associated with the mechanical failure event.

3. The blood pump system of any of claims 1-2, wherein the evaluation device is configured to determine the threshold based on a baseline SNR.

4. The blood pump system of claim 3, wherein the determined threshold is double a magnitude of the baseline SNR.

5. The blood pump system of any of the preceding claims, wherein the evaluation device is configured to determine a pressure signal based on the transmitted optical signal.

6. The blood pump system of claim 5, wherein the evaluation device is configured to determine the mechanical failure event based on the calculated SNR, the motor current, and the determined pressure signal.

7. The blood pump system of any of the preceding claims, wherein the optical fiber sensor is coupled to the pump housing.

8. The blood pump system of any of the preceding claims, wherein the optical fiber sensor is located at the distal end of the catheter.

9. The blood pump system of any of the preceding claims, wherein the time period is between about 1 to about 5 minutes.

10. The blood pump system of any of claims 1-8, wherein the time period is between about 5 to about 10 minutes.

11. The blood pump system of any of the preceding claims further comprising:

a second optical fiber sensor configured to detect a second optical signal; and

a second optical fiber configured to transmit the second optical signal from the second optical fiber sensor to the evaluation device communicatively coupled to the second optical fiber sensor.

12. The blood pump system of any of the preceding claims, wherein based on the calculated SNR the evaluation device is configured to detect vibrations in any one of the pump, motor, and a cannula of the pump.

13. A method of determining a mechanical failure event of a blood pump, the method comprising:

determining a motor current of a motor that is coupled to a catheter and drives the blood pump;

detecting an optical signal at the blood pump;

transmitting the optical signal, using an optical fiber, from the optical fiber sensor to an evaluation device;

calculating, at the evaluation device, a signal to noise ratio (SNR) based on the transmitted optical signal; and

determining a mechanical failure event associated with the blood pump based on the calculated SNR and the determined motor current, wherein the mechanical failure event

associated with the blood pump is determined by the evaluation device to have occurred when, over a time period:

(1) the motor current is greater than zero and

(2) an increase in the calculated SNR in the time period exceeds a predetermined threshold.

14. The method of claim 13, wherein in response to determining the mechanical failure event, generating and outputting an indicator associated with the mechanical failure event.

15. The method of claim 13, further comprising determining the threshold based on a baseline SNR.

16. The method of claim 15, wherein the determined threshold is double a magnitude of the baseline SNR.

17. The method of any of claims 13-16, further comprising determining a pressure signal based on the transmitted optical signal.

18. The method of claim 17, further comprising determining the mechanical failure event based on the calculated SNR, the determined motor current, and the determined pressure signal.

19. The method of any of claims 13-18, wherein the optical fiber sensor is coupled to the motor.

20. The method of any of claims 13-19, wherein the optical fiber sensor is located at the distal end of the catheter.

21. The method of any of claims 13-20, wherein the time period is between about 1 to about 5 minutes.

22. The method of any of claims 13-21, wherein the time period is between about 5 to about 10 minutes.