Claims

1. A heart pump system comprising: a pump comprising a pump housing and a rotor, the pump housing having a proximal end and a distal end, and the pump being configured to be operated by a motor; a cannula comprising a proximal end and a distal end, wherein the proximal end of the cannula interfaces with the distal end of the pump housing; an elongate catheter extending proximal of the pump housing; one or more sensors, including a differential pressure sensor; and a controller configured to: receive a first data indicative of a time-varying motor current during a first period of time while the heart pump system is operating in a patient, wherein the time-varying motor current corresponds to an amount of current delivered to the motor; receive a second data indicative of a time-varying differential pressure measured by the differential pressure sensor during the first period of time, wherein the time-varying differential pressure corresponds to a difference in pressure between an inner portion of the heart pump system and an outside of the heart pump system and is further indicative of a position of the heart pump system relative to patient's heart; receive a third data indicative of time-varying motor current during a second period of time while the heart pump system is operating in the patient, wherein the second period of time is later than the first period of time; determine that the differential pressure sensor has failed when no data is received from the differential pressure sensor during the second period of time; and determine, in response to determining that the differential pressure sensor has failed, an estimate of time-varying differential pressure during the second period of time from the third data and a relationship between the first data and the second data, wherein the estimate of time-varying differential pressure during the second period of time is usable to predict the position of the heart pump system in the patient.

2. The heart pump system of claim 1, wherein the pump is configured to be placed such that the cannula extends across an aortic valve of the patient, the distal end of the cannula being located within a left ventricle of the patient, and the proximal end of the cannula being located within an aorta of the patient.

3. The heart pump system of claim 1, further comprising a flexible projection extending distally away from the distal end of the cannula.

4. The heart pump system of claim 1, wherein the elongate catheter is coupled on its distal end to the pump housing, and wherein the pump further comprises a drive cable extending through the elongate catheter.

5. The heart pump system of claim 1, wherein the controller is further configured to: provide a first indicator that the differential pressure sensor has failed; and provide a second indicator that the estimate of time-varying differential pressure during the second period of time is simulated.

6. The heart pump system of claim 1, wherein the controller is further configured to determine the time-varying differential pressure is drifting by: comparing the time-varying differential pressure to the estimate of time-varying differential pressure for the second period of time; calculating, based on comparing the time-varying differential pressure to the estimate of time-varying differential pressure, a difference between the time-varying differential pressure and the estimate of time-varying differential pressure over the second period of time; comparing the difference to a differential pressure signal threshold; and determining, based on comparing the difference to the differential pressure signal threshold, the difference is greater than the differential pressure signal threshold.