What is claimed is:

1. An automated intubation system comprising:

a tube;

a flexible part disposed longitudinally within the tube;

a bending portion forming at least a part of a distal end of the flexible part;

a housing unit disposed at a distal end of the bending portion and comprising of at least one imaging sensor;

a processing circuitry predicting at least one intended path for insertion of the tube and generating control signals, wherein the at least one intended path is predicted based on at least one anatomical structure recognized using data received from the at least one imaging sensor;

a user interface displaying the at least one path and allowing at least one of: selection of one of the at least one intended path, or modification of one of the at least one intended path; and

at least one actuation unit receiving the control signals for actuating three-dimensional movement of the tube along the selected or modified intended path.

2. The automated intubation system of claim 1, wherein the at least one actuation unit receives control signals from the processing circuitry via at least one communication circuitry.

3. The automated intubation system of claim 1, wherein the at least one actuation unit is connected to the bending portion to actuate a bending movement of the tube in X and Y plane.

4. The automated intubation system of claim 1, wherein the at least one actuation unit comprises one of a sliding or a rotational mechanism to actuate a sliding movement of the tube in Z plane.

5. The automated intubation system of claim 1, wherein the automated intubation system further comprises at least one button to trigger the at least one actuation unit, a switch to release the tube, and at least one port to provide a channel for at least one of instrumentation, suction, or irrigation.

6. The automated intubation system of claim 1, wherein the processing circuitry utilizes a machine learning model to recognize the at least one anatomical structure and to subsequently predict the at least one intended path based on the data received

from the at least one imaging sensor, and to generate the control signals based on the selected or modified intended path.

7. The automated intubation system of claim 6, wherein the machine learning model is generated by:

   collecting a plurality of intubation procedure videos;

   segregating the plurality of intubation procedure videos based upon a predicted level of difficulty of intubation procedure of each of the plurality of intubation procedure videos;

   trimming the segregated intubation procedure videos to exclude parts of videos containing obstructed or unclear view of the at least one anatomical structure;

   converting the trimmed videos into at least one images files;

   assigning a label indicating the at least one anatomical structures to the at least one image files to build a labelled dataset of a plurality of images; and

   training one or more neural networks using the labelled dataset of images.

8. The automated intubation system of claim 1, wherein the automated intubation system is connected to a network and is controlled by a remote operator.

9. The automated intubation system of claim 1, wherein the user interface is rendered on a display device.

10. The automated intubation system of claim 1, wherein the user interface displays an overlay of the at least one anatomical structures, and an overlay of the at least one intended path over the data received from the imaging sensor.

11. The automated intubation system of claim 1, wherein the selection or modification of the at least one intended path displayed on the user interface is performed by an operator using tactile input.

12. The automated intubation system of claim 1, wherein the actuation of the three-dimensional movement of the tube along the selected or modified intended path is overridden by an operator when the operator is not satisfied with the at least one intended path.

13. The automated intubation system of claim 1, wherein the automated intubation system further comprises a main body and a detachable blade connected to the main body via a disposable and/or a reusable sleeve, and wherein the flexible part is connected to the main body.

14. The automated intubation system of claim 1, wherein the housing unit further comprises at least one of a guide light and an outlet channel.

15. A method of automatically intubating a patient, the method comprising,

inserting a bending portion of a flexible part disposed longitudinally within a tube inside the upper airway of the patient;

collecting data from at least one imaging sensor disposed within the bending portion;

communicating collected data to a processing circuitry;

predicting at least one intended path for insertion of the tube using the processing circuitry, wherein the at least one intended path is predicted based on at least one anatomical structure recognized by the processing circuitry using the collected data;

displaying the at least one intended path via a user interface to an operator;

receiving at least one of: selection of one of the at least one intended path, or modification of one of the at least one intended path from the operator via the user interface;

generating control signals based on the selected or modified intended path using the processing circuitry; and

communicating the generated control signals to at least one actuation unit for actuating three-dimensional movement of the tube along the selected or modified intended path.

16. The method of claim 15, wherein communicating the control signals comprise communicating X and Y directional control signals to the at least one actuation unit for actuating a bending movement of the tube in X and Y plane via the bending portion.

17. The method of claim 15, wherein communicating the control signals comprise communicating Z directional control signals to the at least one actuation unit for actuating a sliding movement of the tube in Z plane via a sliding mechanism or a rotational mechanism.

18. The method of claim 15, wherein recognition of the at least one anatomical structure and subsequent prediction of the at least one intended path is performed using a machine learning model and based on the data received from the at least one imaging sensor.

19. The method of claim 15, wherein the user interface displays an overlay of the at least one anatomical structures, and an overlay of the at least one intended path over the data received from the imaging sensor.

20. The method of claim 15, wherein the selection or modification of the at least one intended path displayed on the user interface is performed by an operator using tactile input.