CLAIMS:

1. A computer-implemented method of controlling an aircraft during autonomous landing, the computer-implemented method comprising:

using a computer for performing the following:

applying image processing on an image captured by a camera on-board the aircraft while approaching a runway for identifying in the image a touchdown point (TDP) of the runway;

calculating a deviation, in image parameters, of the TDP relative to the center of the image, the calculating comprising:

defining a horizontal y-axis and a vertical z-axis in the image, the horizontal y axis and the vertical z-axis intersecting through a point of the image,

calculating a lateral deviation in pixels from the horizontal y-axis of the image to the identified TDP in the image, and

calculating a longitudinal deviation in pixels from the vertical z-axis of the image to the identified TDP in the image;

converting the deviation in image parameters to angular and distance deviation values based on predefined ratios;

obtaining parameters of a landing corridor ending at the identified TDP, camera parameters and one or more aircraft parameters, wherein the one or more aircraft parameters comprise at least one of an altitude of the aircraft, an attitude of the aircraft, and a speed of the aircraft,

wherein the landing corridor comprises a plurality of gliding legs extending over different distances and in different angles;

calculating an offset of the aircraft's position relative to a landing corridor ending at the identified TDP based on the calculated angular and distance deviation, the parameters of the landing corridor, the camera parameters and the one or more aircraft parameters; and

transmitting the calculated offset to an aircraft control system configured to provide instructions for controlling the aircraft;

wherein the offset is used for controlling the aircraft for guiding the aircraft towards the landing corridor to enable landing.

2. The computerized method of claim 1, wherein calculating an offset of the aircraft's position relative to a landing corridor includes:

calculating the lateral offset of the aircraft relative to the landing corridor; and

calculating a longitudinal offset of the aircraft relative to the landing corridor.

3. The computerized method of any one of the preceding claims, further comprising:

controlling the aircraft towards the landing corridor.

4. The computerized method of any one of the preceding claims, wherein the one or more camera parameters comprise one or more camera parameters of the camera's positioning on-board the aircraft relative to an axis of the aircraft..

5. The computerized method of any one of the preceding claims, further comprising:

repeating the process iteratively until safe landing of the aircraft.

6. The computerized method of any one of the preceding claims, further comprising:

continuously obtaining images until a TDP is identified.

7. The computerized method of any one of the preceding claims, wherein identifying in the image a TDP of the runway includes:

locating a runway in the image;

identifying a beginning and an ending of the runway; and

identifying the location of the TDP relative to the beginning and ending of the runway.

8. The computerized method of any one of the preceding claims, wherein the field of view (FOV) of the camera is pointing in a direction which allows capturing images of the area in front of the aircraft's nose.

9. A system mountable on an aircraft for controlling the aircraft during autonomous landing, the system comprising:

a camera; and

a processor operatively connected to the camera and configured to perform the following:

while approaching a runway, obtain from the camera a captured image;

identify in the image a touchdown point (TDP) of the runway;

calculate a deviation in image parameters from a center of the image relative to the identified TDP, the calculation comprising:

defining a horizontal y-axis and a vertical z-axis in the image, the horizontal y axis and the vertical z-axis intersecting through a point of the image,

calculating the lateral deviation in pixels from the horizontal y-axis of the image to the identified TDP in the image, and

calculating a longitudinal deviation in pixels from the vertical z-axis of the image to the identified TDP in the image;

convert the deviation in image parameters to angular and distance deviation based on predefined ratios;

obtain parameters of a landing corridor ending at the identified TDP, camera parameters and one or more aircraft parameters, wherein the one or more aircraft parameters comprise at least one of an altitude of the aircraft, an attitude of the aircraft, and a speed of the aircraft,

wherein the landing corridor comprises a plurality of gliding legs extending over different distances and in different angles;

calculate an offset of the aircraft's position relative to a landing corridor ending at the identified TDP based on the calculated angular and distance deviation, the parameters of the landing corridor, the camera parameters and the aircraft parameters; and

transmit the calculated offset to an aircraft control system configured to provide instructions for controlling the aircraft; wherein the offset is used to control the aircraft during landing.

10. The system of claim 9, wherein the processor is further configured to:

calculate the lateral offset of the aircraft relative to the landing corridor; and

calculate the longitudinal offset of the aircraft relative to the landing corridor.

11. The system of claim 9 or claim 10, further comprising:

a flight control system for controlling the aircraft to guide the aircraft towards the landing corridor based on one or more commands from the aircraft control system.

12. The system of claim 9, wherein the one or more camera parameters comprise one or more camera parameters of the camera's positioning on-board the aircraft relative to an axis of the aircraft.

13. The system of any one of Claims 9 to 12, wherein the processor is further configured to:

repeat the process iteratively until the aircraft safely lands.

14. The system of any one of Claims 9 to 13, wherein the system is further configured to:

continuously capture images until a TDP is identified.

15. The system of any one of Claims 9 to 14, wherein the processor is further configured to:

locate a runway in the image;

identify a beginning and an ending of the runway; and

identify the location of the TDP relative to the beginning and ending of the runway.

16. The system of any one of Claims 9 to 15, wherein the camera includes at least one of: a panoramic camera; a mid-wavelength infrared camera; a short-wavelength infrared camera; a light detection and ranging camera; or a synthetic aperture radar camera.

17. The system of any one of Claims 9 to 16, wherein the flight control system is operatively connected to one or more of: an engine; a flight control surface; or a landing gear.

18. The system of any one of Claims 9 to 17, wherein the one or more aircraft parameter sensors include at least one of: an altitude sensor; an angles sensor; or a speed sensor.

19. The system of any one of Claims 9 to 18, wherein the aircraft is an unmanned aerial vehicle (UAV).

20. The system of any one of Claims 9 to 19, wherein the field of view (FOV) of the camera is pointing in a direction which allows capturing images of the area in front of the aircraft's nose.

21. A non-transitory program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method of controlling an aircraft during autonomous landing, the method comprising:

applying image processing on an image captured by a camera on-board the aircraft while approaching a runway for identifying in the image a touchdown point (TDP) of the runway;

calculating a deviation, in image parameters, of the TDP relative to acenter of the image, the calculating comprising:

defining a horizontal y-axis and a vertical z-axis in the image, the horizontal y axis and the vertical z-axis intersecting through a point of the image,

calculating a lateral deviation in pixels from the horizontal y-axis of the image to the identified TDP in the image, and

calculating a longitudinal deviation in pixels from the vertical z-axis of the image to the identified TDP in the image,;

converting the deviation in image parameters to angular and distance deviation values based on predefined ratios;

obtaining parameters of a landing corridor ending at the identified TDP, camera parameters and one or more aircraft parameters, wherein the one or more aircraft parameters comprise at least one of an altitude of the aircraft, an attitude of the aircraft, and a speed of the aircraft,

wherein the landing corridor comprises a plurality of gliding legs extending over different distances and in different angles;

calculating an offset of the aircraft's position relative to a landing corridor ending at the identified TDP based on the calculated angular and distance deviation, the parameters of the landing corridor, the camera parameters and the one or more aircraft parameters; and

transmitting the calculated offset to an aircraft control system configured to provide instructions for controlling the aircraft;

wherein the offset is used for controlling the aircraft during landing.