WHAT IS CLAIMED IS:

1. A method for moving an object with unknown weight distribution, comprising:

obtaining at least one image of the object placed at a starting location;

processing the image to determine an available pickup area on a first surface of the object and a first position corresponding to a center of the available pickup area as a pickup position;

picking up the object by a pickup module with a predetermined lifting distance for a first time period by applying a pickup force of a predetermined first level to the first surface at the pickup position;

obtaining sensor data in at least two dimensions corresponding to the pickup module during the first time period;

determining whether to adjust the pickup position based on the sensor data by using a first pre-trained model in comply with a first criteria;

adjusting the pickup position for obtaining an adjusted pickup position based on the sensor data and the available pickup area on the first surface of the object by using a second pre-trained model in comply with a second criteria; and

picking up the object at the adjusted pickup position and moving the object from the starting location to a destination location,

wherein the sensor data comprises at least torque values and force values in two or more dimensions, wherein the first criteria comprise:

in response to all of the torque values fallen into first regions, maintaining the first position as the pickup position,

in response to the any of torque values fallen into second regions,

adjusting the pickup position to the adjusted pickup position;

wherein maximum absolute values of the first regions are less than maximum absolute values of the second regions.

2. The method according to claim 1, further comprising:

adjusting the pickup force to a second level according to the sensor data by using the second pre-trained model; and

picking up the object at the adjusted pickup position by applying the pickup force of the second level.

3. The method according to claim 1, wherein the first criteria further comprise:

in response to any of the torque values and the force value fallen into third regions, aborting pickup process of the object;

wherein maximum absolute values of the second regions are less than maximum absolute values of the third regions.

4. The method according to claim 1, wherein the second criteria comprise:

determining offset values of the torque values to the first regions; and

determining the adjusted pickup position within the available pickup area according to the offset values.

5. The method according to claim 4, wherein the second criteria further comprise:

in response to the adjusted pickup position within the available pickup area being unable to find, aborting picking up process of the object.

6. The method according to claim 1, wherein the first criteria further comprise:

in response to the force value fallen into first region, maintaining

the pickup force of the first level; and

in response to the force value fallen into second region, adjusting the pickup force to a second level;

wherein absolute values of the first regions are smaller than absolute values of the second regions.

7. The method according to claim 1, wherein the available pickup area is a square area or a circular area with edges not exceeding outer edges of the object, and wherein distances between edges of the object and the available pickup area is at least larger than 1/2 area widths of the pickup unit.

8. The method according to claim 1, wherein a pickup unit of the pickup module in contact with the object is a suction gripper or suction gripper array, and the pickup force is applied in a direction perpendicular to the first surface.

9. A robotic object moving system, comprising:

an image retrieving module, configured for obtaining at least one image of an object placed at a starting location;

an image processing module, connected to the image retrieving module, and configured for processing the at least one image to determine an available pickup area on a first surface of the object and a first position corresponding to a center of the available pickup area as a pickup position;

a pickup module, configured for picking up the object with a predetermined lifting distance for a first time period by applying a pickup force of a predetermined first level to the first surface at the pickup position;

a sensing module, connected to the pickup module, and configured

for sensing sensor data in at least two dimensions corresponding to the pickup module during the first time period; and

a control module, connected to the image processing module, the pickup module and the sensing module, and configured for controlling the pickup module, and determining whether to adjust the pickup position based on the sensor data by using a first pre-trained model in comply with a first criteria, wherein the control module adjusts the pickup position for obtaining an adjusted pickup position based on the sensor data and the available pickup area on the first surface of the object by using a second pre-trained model in comply with a second criteria,

wherein the pickup module picks up the object at the adjusted pickup position and moves the object from the starting location to a destination location

,wherein the sensor data comprises at least torque values and force value in two or more dimensions, wherein the first criteria further comprise:

in response to all of the torque values fallen into first regions, maintaining the first position as the pickup position,

in response to the any of torque values fallen into second regions, adjusting the pickup position to the adjusted pickup position;

wherein the first regions are defined as having offsets to initial values smaller than first thresholds, the second regions are defined as having offsets to initial values between the first thresholds and second thresholds, and wherein the second thresholds are larger than the first thresholds.

10. The robotic object moving system according to claim 11, wherein the

control module adjusts the pickup force to a second level according to the sensor data by using the second pre-trained model, and the pickup module picks up the object at the adjusted pickup position by applying the pickup force of the second level.

11. The robotic object moving system according to claim 9, wherein the first criteria further comprise:

in response to any of the torque values and the force value fallen into third regions, aborting pickup process of the object;

wherein the third regions are defined as having offsets to initial values larger than the second thresholds.

12. The robotic object moving system according to claim 9, wherein the second criteria comprise:

determining offset values of the torque values to the first regions; and

determining the adjusted pickup position within the available pickup area according to the offset values.

13. The robotic object moving system according to claim 12, wherein the second criteria further comprise:

in response to the adjusted pickup position within the available pickup area being unable to find, aborting pickup process of the object.

14. The robotic object moving system according to claim 9, wherein the first criteria further comprise:

in response to the force value fallen into the first regions, maintaining the pickup force at the first level; and

in response to the force value fallen into the second regions, adjusting the pickup force to a second level;

wherein the first regions are defined as having offsets to initial

values smaller than first thresholds, the second regions are defined as having offsets to initial values between the first thresholds and second thresholds, and wherein the second thresholds are larger than the first thresholds.

15. The robotic object moving system according to claim 9, wherein the available pickup area is a square area or a circular area with edges not exceeding outer edges of the object, and wherein distances between edges of the object and the available pickup area is at least larger than 1/2 area widths of the pickup unit.
16. The robotic object moving system according to claim 9, wherein a pickup unit of the pickup module in contact with the object is a suction gripper or suction gripper array, and the pickup force is applied in a direction perpendicular to the first surface.