CLAIMS

1. A refrigeration system comprising:

a cabinet having an interior space;

a cooling sub-assembly to cool the interior space;

a door connected to a front side of the refrigeration cabinet to seal the interior space when in a closed position, and to provide access to the interior space when in an opened position;

a rack sub-assembly mounted to an interior of the cabinet, the rack sub-assembly including a set of racks, each rack being moveable from a seated position that is fully contained within the interior space, to an extended position where at least a segment of the rack extends outside of the interior space to receive one or more items;

a camera array including one or more cameras, each of the one or more cameras being oriented such that a corresponding viewing angle includes a vertical space that is in front of the interior space.

2. The refrigeration system of claim 1, wherein the camera array includes multiple cameras array are positioned outside of the interior space of the cabinet.

3. The refrigeration system of claim 2, wherein the multiple cameras of the camera array are oriented downward, so that the vertical space of the viewing angle includes a portion that overlaps with a space occupied by a thickness of the door when the door is in the closed position.

4. The refrigeration system of claim 3, wherein the multiple cameras of the camera array are integrated into a structure of the cabinet.

5. The refrigeration system of claim 3, wherein the multiple cameras are attached to the cabinet as a retrofit.

6. The refrigeration system of claim 1, wherein the camera array includes one or more wide angle lenses.

7. The refrigeration system of claim 6, wherein the camera array includes at least a first wide angle lens positioned in proximity to at least a first lateral side of the interior space, and a second wide angle lens positioned in proximity to at least a second lateral side of the interior space.

8. The refrigeration system of claim 7, wherein the camera array includes at least a third lens positioned in between the first wide angle lens and the second wide angle lens.

9. The refrigeration system of claim 8, wherein the set of racks includes a first rack that is positioned in proximity to a top side of the interior space, and a second rack positioned underneath the first rack; and

wherein the camera array is operable to capture recognizable images of objects placed on the first rack using either or both of the first wide angle lens and/or the second wide angle lens.

10. The refrigeration system of claim 9, wherein the camera array is operable to capture recognizable images of objects placed on the second rack using the third lens.

11. The refrigeration system of claim 1, wherein the camera array is triggerable by movement to capture and process images.

12. A refrigeration system comprising:

a cabinet having an interior space;

a cooling sub-assembly to cool the interior space;

a door connected to a front side of the refrigeration cabinet to seal the interior space when in a closed position, and to provide access to the interior space when in an opened position;

a rack sub-assembly mounted to an interior of the cabinet, the rack sub-assembly including a set of racks, each rack being moveable from a seated position that is fully contained within the interior space, to an extended

position where at least a segment of the rack extends outside of the interior space to receive one or more items;

a camera array including one or more cameras, each of the one or more cameras being oriented such that a corresponding viewing angle includes a vertical space that is in front of the interior space; and

one or more processors, wherein the one or more processors execute instructions to perform operations that include:

detecting a rack of the rack sub-assembly in the extended position;

capturing one or more images of the rack; and

initiating performance of image analysis of the one or more images to determine information about one or more items that are placed on the rack.

13. The refrigeration system of claim 12, wherein the one or more processors execute instructions to perform the image analysis.

14. A camera module for a refrigeration system, the camera module comprising:

a camera array including one or more cameras;

a housing;

wherein the housing is structured to secure to a refrigeration system, to position the camera array such that a corresponding viewing angle of one or more cameras of the camera array a vertical space that coincides with a thickness that occupies a door of the refrigeration system when the door is in a closed position; and

one or more processors, wherein the one or more processors execute instructions to perform operations that include:

capturing one or more images of a rack of the refrigeration system when the rack is extended from an interior cabinet; and

initiating performance of image analysis of the one or more images to determine information about one or more items that are placed on the rack.