Claims:

1. A computer-implemented method for training an inspection system for contact lens defect inspection, the method comprising:

acquiring an uncompressed high resolution image of a contact lens;

preprocessing the contact lens image by applying smoothing algorithms to enhance defect information without compressing the pixel data;

reconstructing the pre-processed contact lens image into a square or a plurality of areas, formed from image segments with overlapping areas obtained from the pre-processed contact lens image;

applying deep learning algorithms to the segmented images to extract feature information within each image to aid in machine learning and training;

classifying the extracted and calibrated feature information under several categories through the application of neural networks;

re-classifying the categories of extracted features from new images generated through application of generative adversarial networks to the segmented images;

creating a database of extracted features detected within the segmented images for micro defect inspection in uncompressed images;

applying neural networks in combination with the database to inspect new contact lenses.

2. The computer-implemented method of claim 1, further comprising removal of redundant data not relevant to the defect being inspected.

3. The computer-implemented method of claim 1, further comprising removal of redundant data and replacing it with dark pixels to enhance accuracy of the neural network.

4. The computer-implemented method of claim 1, further comprising

extracting a circular edge of the contact lens image;

transposing the circular edge horizontally and unwrapping into a horizontal line; and

dividing the horizontal line into multiple segments with overlapping areas so as not to miss any pixel information when joining two adjacent edges.

5. The computer-implemented method of claim 4, further comprising the process of stacking each horizontal line one above the other to create a normalised square image for further analysis.

6. The computer-implemented method of claim 5, wherein the image is processed using deep learning modules for training, analysis or inspection of the object depending upon the process step at any given time.

7. The computer-implemented method of claim 1, further comprising tracing an edge of the contact lens image and dividing the contact lens image into several overlapping squares optimised for input to a graphic processing unit.

8. The computer-implemented method of claim 7, further comprising extracting the overlapping squares and filling all redundant pixels outside the edge with black pixels.

9. The computer-implemented method of claim 8, further comprising analysing and categorising the extracted features and characteristics of defects to further enhance the efficacy of the accumulated domain knowledge database.

10. The computer-implemented method of claim 9, further comprising performing defect inspection of new contact lenses using domain knowledge built through deep learning modules.