Claims

1. A system for generating an optimized online garment creation platform, the system comprising:

a memory storing program instructions;

a processor executing the program instructions stored in the memory; and

a garment creation engine executed by the processor and configured to:

render multiple fabric pieces data via a user interface (UI) on a user device;

tag the one or more fabric pieces data on the UI based on a circulatory score, wherein the circulatory score is indicative of environmental impact of the fabric pieces data;

tag a size of a garment type on the UI using the tagged fabric piece data for designing a garment via the UI;

render one or more garment types in a template form on the UI, wherein the one or more garment type templates are tagged on the UI;

split the tagged garment type template into a fixed number of one or more panels, wherein dimensions and layout of the panels vary based on the tagged garment type template;

optimally embed images in the one or more panels of the garment type template, wherein a pixel per distance metric of an edited region of the image is computed for determining size of the edited region of the image;

add the edited region of the image as a swatch in the garment type template, wherein the swatches which fit the edited region of the image for a specific angle of rotation of the edited region of the image are determined in the garment type template, and wherein the swatches are determined based on: initializing a convex polygon (‘polygon A’) with a midpoint of a concave polygon (‘polygon B’) as origin; computing every rotational angle of the convex

polygon; computing multiple points corresponding to the convex polygon with rotational angle and subsequently placing all points of both the rotated convex polygon and concave polygon in a set of points; determining a new convex polygon (‘polygon C’) from the set of points that comprises both the convex and concave polygons having multiple vertex points; and performing a check to determine if the ‘polygon C’ and the ‘polygon B’ are having a same set of vertex points; and

tag the one or more panels of the garment type template for embedding with the one or more edited images.

2. The system as claimed in claim 1, wherein the UI is an actionable UI generated by a user interface generation and recommendation unit of the garment creation engine and configured to capture user inputs for online garment creation and render a plurality of features for garment creation and designing via the UI.

3. The system as claimed in claim 1, wherein the UI renders a dashboard on the user device comprising one or more options associated with garment creation and designing for receiving inputs, and wherein the one or more options comprises size selection option, color selection option, base pattern selection option, thread selection option, type of fabric selection option and collaboration option with other users for designing the garments.

4. The system as claimed in claim 1, wherein the garment creation engine comprises a user input capturing unit for transmitting analyzed inputs associated with requirements for garment creation and designing as the first set of instructions to a user interface generation and recommendation unit within the garment creation engine, and wherein based on the first set of instructions the user interface generation and recommendation unit triggers a fabric and size selection unit within the garment creation engine, and wherein the fabric and size selection unit transmits a second set of instructions to the database for fetching and rendering the multiple fabric pieces data in a graphical format via the UI.

5. The system as claimed in claim 1, wherein the multiple fabric pieces data are catalogued in the database in a graphical file format for storage, and wherein the multiple fabric pieces

data stored in the database is associated with fabric use data, fabric pattern data, fabric styles data, fabric default fitting data and type of fabric piece data.

6. The system as claimed in claim 5, wherein the multiple fabric pieces data comprises photographs uploaded by a user via the UI, the photographs are uploaded in a pre-defined format and correspond to one or more fabric pieces available at the user device, and wherein the photographs of the fabric pieces data are stored in the database in a graphical file format.

7. The system as claimed in claim 1, wherein the fabric pieces data is associated with a metadata, and wherein the metadata comprises one or more parameters such as data related to the material of the fabric piece, reusability of the fabric piece, environmental impact of the fabric piece, recycling efficiency of the fabric piece and life extension of the fabric piece.

8. The system as claimed in claim 7, wherein the garment creation engine comprises a circulatory score computation unit executed by the processor and configured to compute the circulatory score for each of the metadata associated with the fabric pieces data, and wherein the circulatory score is a cumulative circulatory score of the circulatory score computed separately for each of the parameters associated with the fabric piece metadata, the circulatory score is in a range of between 0-100 such that higher the circulatory score more environmentally suitable is the fabric piece.

9. The system as claimed in claim 1, wherein the garment creation engine comprises a fabric and size selection unit executed by the processor and configured to provide various size options on the UI based on received inputs for tagging the size of the garment type.

10. The system as claimed in claim 1, wherein the garment creation engine comprises a garment selection unit executed by the processor and configured to communicate with the database for fetching and rendering the garment types in the template form on the UI via a user interface generation and recommendation unit, and wherein the garment selection unit is configured to tag the garment type template for garment creation and designing on the UI based on a selection of a design rendered via the UI.

11. The system as claimed in claim 10, wherein the garment selection unit is further configured to split measurement of the garment type template into one or more components based on the size of the garment type tagged by a fabric and size selection unit in the garment creation engine before rendering on the UI.

12. The system as claimed in claim 10, wherein the garment selection unit is further configured to automatically compute fabric piece requirement for garment creation and designing based on the size tagged by the fabric and size selection unit on the UI.

13. The system as claimed in claim 10, wherein one or more design elements comprising color, pattern and style are selected via the UI for the garment type template based on the selected design, and wherein the garment selection unit is configured to display images of the selected design on the UI.

14. The system as claimed in claim 1, wherein the panels are selected at least on a front portion of the garment type template and on a back portion of the garment type template, and wherein size of the panels is at least increased and decreased based on user requirements, and wherein a garment selection unit in the garment creation engine executed by the processor is configured to determine panel parameters information comprising size, shape and placement of the panels based on inputs received via the UI.

15. The system as claimed in claim 1, wherein the garment creation engine comprises a garment selection unit executed by the processor and configured to upload images via the UI for embedding in the panels, the images relate to at least apparels and memories of the users, and wherein the images on the UI are uploaded by at least accessing an image library in the user device and from a social media website.

16. The system as claimed in claim 15, wherein the garment selection unit is configured to track and monitor the uploaded images of apparels and memories of the users.

17. The system as claimed in claim 1, wherein the garment creation engine comprises a feature optimization unit executed by the processor and configured to automatically perform one or more editing operations on one or more uploaded images comprising cropping and

rotation of the images, and wherein the feature optimization unit is configured to provide an option to the user for further editing the automatically edited images.

18. The system as claimed in claim 1, wherein the embedding of the edited images into the panels of the garment type template comprises fitting the edited image inside the panel of the garment type template for at least one angle or fitting the edited image inside the panel of the garment type template for all rotational angles.

19. The system as claimed in claim 17, wherein the feature optimization unit is configured to estimate camera position and accordingly triangulate for carrying out monocular simultaneous localization and mapping operation on the user device for effectively capturing the images, and wherein the feature optimization unit is configured to instruct the user to place a reference object at least on the top left corner or left side of at least an apparel and memory image for effectively estimating the camera position and carrying out triangulation for capturing the apparel and memory image prior to uploading.

20. The system as claimed in claim 19, wherein the feature optimization unit is configured to compute the pixel per distance metric comprising the steps of:

converting the captured apparel and memory image to a grayscale and smoothing the grayscale apparel and memory image using a Gaussian filter;

carrying out an edge detection operation of the captured apparel and memory image along with erosion and dilation operations to close gaps in edges in an edge map of the apparel and memory image;

determining one or more contours corresponding to the objects in the edge map, wherein the contours are determined based on applying at least canny edge detector technique, semantic segmentation technique, Hough transform technique and k-means segmentation technique;

sorting the contours from at least top left to bottom right of the captured apparel image;

computing a Euclidean distance for determining the contour of the reference object; and

computing the pixel per distance metric for the edited region of the image.

21. The system as claimed in claim 19, wherein the feature optimization unit is configured to generate a contour of the reference object as a bounded rectangle shape, and wherein the contour of the reference object is generated by computing: midpoint of top left and top right corner of the bounded rectangle shape, midpoint of bottom left and bottom right corner of the bounded rectangle shape, midpoint of top left and bottom left corner of the bounded rectangle shape, and midpoint of top right and bottom right corner of the bounded rectangle shape.

22. The system as claimed in claim 1, wherein the swatches in the garment type template which fit the edited region of at least an apparel and a memory image are determined, the new convex polygon (‘polygon C’) is determined from the set of points using a graham scan technique executing a convex hull algorithm , and wherein if the ‘polygon C’ and the ‘polygon B’ are same having the same set of vertex points then it is determined that the ‘polygon B’ contains the ‘polygon A’ and the swatches in the garment type template fits the edited region of at least the apparel and memory image for a specific angle of rotation, and wherein if the ‘polygon C’ and the ‘polygon B’ are not same and does not have the same set of vertex points then it is determined that the ‘polygon B’ does not contain the ‘polygon A’ and the swatches in the garment type template does not fit the edited region of at least the apparel and memory image for a specific angle of rotation.

23. The system as claimed in claim 1, wherein the garment creation engine comprises a feature optimization unit executed by the processor and configured to automatically highlight the panels of the garment type template for users for embedding with the edited images subsequent to the editing of the images.

24. The system as claimed in claim 10, wherein the garment selection unit in communication with a feature optimization unit is configured to provide a drag and drop functionality on the UI for embedding the edited images into the panels of the garment type template.

25. The system as claimed in claim 10, wherein the garment selection unit in communication with a feature optimization unit is configured to provide an option on the UI to preview a created and designed garment type subsequent to the embedding of images in the panels, and wherein options are provided on the UI to the user to accept and proceed to next panel or reject and select another apparel or memory image and upload on the UI via the user device for embedding in the panel.

26. The system as claimed in claim 10, wherein the garment selection unit in communication with the feature optimization unit is configured to generate at least a 2D and a 3D representation of the designed garment type with the embedded apparel or memory image in the panel and render on the UI.

27. The system as claimed in claim 1, wherein the garment creation engine comprises an avatar generation unit executed by the processor and configured to generate an avatar of a user for displaying the designed garment type on the user via the UI from different sides of the user, as a virtual try-on technique, and wherein the avatar generation unit is configured to generate at least a graphical representation or a model of the designed garment type in avatar form on the UI and render via the user device.

28. The system as claimed in claim 27, wherein the avatar generation unit is configured to generate the one or more avatars for carrying out a virtual fashion show in which the user may display his or her designed garments via the avatars on the UI.

29. The system as claimed in claim 1, wherein the garment creation engine comprises a feedback unit executed by the processor and configured to enable the user to request a feedback and modifications from other users with respect to the created and designed garment type, and wherein the feedback is received by the feedback unit 130 in the form of at least voice messages and emails.

30. The system as claimed in claim 1, wherein the garment creation engine comprises an inventory management unit executed by the processor and configured to send a final designed garment for stitching and sewing to a garment stitching and sewing workshop, and wherein a layout of the designed garment is generated by the inventory management unit in the form of

a report providing an indication with cross-reference between panels and fabric chosen for clear and concise placement during stitching and sewing.

31. The system as claimed in claim 1, wherein the garment creation engine comprises a repurposing unit executed by the processor and configured to render an option to the user via the UI for sending unused garments and apparels to the warehouse, where the unused garments and apparels are at least reused, repurposed into new garments, resold as second hand garments, repaired for extending life and recycled using mechanical, chemical and thermal processes.

32. The system as claimed in claim 30, wherein the inventory management unit is configured to manage three types of feeds comprising one or more real-time inventory feeds received via a network socket, one or more near real-time inventory feeds received via the network socket or an inventory provider Application Programming Interface (API) and a last updated time based API inventory call to inventory provider API for fetching one or more incremental inventory updates.

33. The system as claimed in claim 30, wherein the inventory management unit is configured to maintain the inventory data in an indexed format using an elastic search cluster technique, the inventory data is accessible via a material master API, and wherein the inventory management unit is configured to provide one or more options for regulating in-house material inventory feeds and the external material inventory feeds such as material API, Material Display Page (MDP), add to cart and express checkout for interacting with material master API in order to validate fulfilment of material requirements for garment stitching and sewing.

34. A method for generating an optimized online garment creation platform, wherein the method is implemented by a processor executing program instructions stored in a memory, the method comprises:

rendering multiple fabric pieces data via a user interface (UI) on a user device;

tagging the one or more fabric pieces data on the UI based on a circulatory score, wherein the circulatory score is indicative of environmental impact of the fabric pieces data;

tagging a size of a garment type on the UI using the tagged fabric piece data for designing a garment via the UI;

rendering one or more garment types in a template form on the UI, wherein the one or more garment type templates are tagged on the UI;

splitting the tagged garment type template into a fixed number of one or more panels, wherein dimensions and layout of the panels vary based on the tagged garment type template;

optimally embedding images in the one or more panels of the garment type template, wherein a pixel per distance metric of an edited region of the image is computed for determining size of the edited region of the image;

adding the edited region of the image as a swatch in the garment type template, wherein the swatches which fits the edited region of the image for a specific angle of rotation of the edited region of the image are determined in the garment type template, and wherein the swatches are determined based on: initializing a convex polygon (‘polygon A’) with a midpoint of a concave polygon (‘polygon B’) as origin; computing every rotational angle of the convex polygon; computing multiple points corresponding to the convex polygon with rotational angle and subsequently placing all points of both the rotated convex polygon and concave polygon in a set of points; determining a new convex polygon (‘polygon C’) from the set of points that comprises both the convex and concave polygons having multiple vertex points; and performing a check to determine if the ‘polygon C’ and the ‘polygon B’ are having a same set of vertex points; and

tagging the one or more panels of the garment type template for embedding with the one or more edited images.

35. The method as claimed in claim 34, wherein the fabric pieces data is associated with a metadata, the metadata comprises one or more parameters such as data related to the material of the fabric piece, reusability of the fabric piece, environmental impact of the fabric piece, recycling efficiency of the fabric piece and life extension of the fabric piece.

36. The method as claimed in claim 35, wherein the circulatory score is computed for each fabric piece metadata, and wherein the circulatory score is a cumulative circulatory score of the circulatory score computed separately for each of the parameters associated with the fabric piece metadata, the circulatory score is in a range of between 0-100 such that higher the circulatory score more environmentally suitable is the fabric piece.

37. The method as claimed in claim 34, wherein the garment type template is tagged for garment creation and designing on the UI based on a selection of design rendered via the UI.

38. The method as claimed in claim 37, wherein measurement of the garment type template is split into one or more components based on the size of the garment type tagged before rendering on the UI.

39. The method as claimed in claim 34, wherein the panels are selected at least on a front portion of the garment type template and on a back portion of the garment type template, and wherein size of the panels is at least increased and decreased based on user requirements, and wherein panel parameters information is determined comprising size, shape and placement of the panels based on the inputs received via the UI.

40. The method as claimed in claim 34, wherein the images relate to at least apparels and memories of the users, and wherein the images on the UI are uploaded by at least accessing an image library in the user device and from a social media website.

41. The method as claimed in claim 34, wherein the editing operations are automatically performed on the uploaded images comprising cropping and rotation of the images, and wherein an option is provided to the user for further editing the automatically edited images.

42. The method as claimed in claim 34, wherein the embedding of the edited images into the panels of the garment type template comprising fitting the edited image inside the panel of the garment type template for at least one angle or fitting the edited image inside the panel of the garment type template for all rotational angles.

43. The method as claimed in claim 34, wherein the user is instructed to place a reference object at least on the top left corner or left side of at least an apparel and memory image for

effectively estimating the camera position and carrying out triangulation for capturing the at least apparel and memory image prior to uploading.

44. The method as claimed in claim 34, wherein computation of the pixel per distance metric comprises the steps of:

converting the captured apparel and memory image to a grayscale and smoothing the grayscale apparel and memory image using a Gaussian filter;

carrying out an edge detection operation of the captured apparel and memory image along with erosion and dilation operations to close gaps in edges in an edge map of the apparel and memory image;

determining one or more contours corresponding to the objects in the edge map, wherein the contours are determined based on applying at least canny edge detector technique, semantic segmentation technique, Hough transform technique and k-means segmentation technique;

sorting the contours from at least top left to bottom right of the captured apparel image;

computing a Euclidean distance for determining the contour of the reference object; and

computing the pixel per distance metric for the edited region of the image.

45. The method as claimed in claim 43, wherein a contour of the reference object is generated as a bounded rectangle shape, and wherein the contour of the reference object is generated by computing: midpoint of top left and top right corner of the bounded rectangle shape, midpoint of bottom left and bottom right corner of the bounded rectangle shape, midpoint of top left and bottom left corner of the bounded rectangle shape, and midpoint of top right and bottom right corner of the bounded rectangle shape.

46. The method as claimed in claim 34, wherein the swatches in the garment type template which fit the edited region of at least an apparel and a memory image are determined, the new convex polygon (‘polygon C’) is determined from the set of points using a graham scan

technique executing a convex hull algorithm, and wherein if the ‘polygon C’ and the ‘polygon B’ are same having the same set of vertex points then it is determined that the ‘polygon B’ contains the ‘polygon A’ and the swatches in the garment type template fits the edited region of at least the apparel and memory image for a specific angle of rotation, and wherein if the ‘polygon C’ and the ‘polygon B’ are not same and does not have the same set of vertex points then it is determined that the ‘polygon B’ does not contain the ‘polygon A’ and the swatches in the garment type template does not fit the edited region of at least the apparel and memory image for a specific angle of rotation.

47. The method as claimed in claim 34, wherein an avatar of a user is generated for displaying the designed garment type on the user via the UI from different sides of the user, as a virtual try-on technique, and wherein at least a graphical representation or a model of the designed garment type in avatar form is generated on the UI and rendered via the user device.

48. The method as claimed in claim 34, wherein three types of feeds are managed comprising one or more real-time inventory feeds received via a network socket, one or more near real-time inventory feeds received via the network socket or an inventory provider Application Programming Interface (API) and a last updated time based API inventory call to inventory provider API for fetching one or more incremental inventory updates.

49. A computer program product comprising:

a non-transitory computer-readable medium having computer program code stored thereon, the computer-readable program code comprising instructions that, when executed by a processor, causes the processor to:

render multiple fabric pieces data via a user interface (UI) on a user device;

tag the one or more fabric pieces data on the UI based on a circulatory score, wherein the circulatory score is indicative of environmental impact of the fabric pieces data;

tag a size of a garment type on the UI using the tagged fabric piece data for designing a garment via the UI;

render one or more garment types in a template form on the UI, wherein the one or more garment type templates are tagged on the UI;

split the tagged garment type template into a fixed number of one or more panels, wherein dimensions and layout of the panels vary based on the tagged garment type template;

optimally embed images in the one or more panels of the garment type template, wherein a pixel per distance metric of an edited region of the image is computed for determining size of the edited region of the image;

add the edited region of the image as a swatch in the garment type template, wherein the swatches which fits the edited region of the image for a specific angle of rotation of the edited region of the image are determined in the garment type template, and wherein the swatches are determined based on: initializing a convex polygon (‘polygon A’) with a midpoint of a concave polygon (‘polygon B’) as origin; computing every rotational angle of the convex polygon; computing multiple points corresponding to the convex polygon with rotational angle and subsequently placing all points of both the rotated convex polygon and concave polygon in a set of points; determining a new convex polygon (‘polygon C’) from the set of points that comprises both the convex and concave polygons having multiple vertex points; and performing a check to determine if the ‘polygon C’ and the ‘polygon B’ are same having a same set of vertex points; and

tag the one or more panels of the garment type template for embedding with the one or more edited images.