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Journal of Research in Gender Studies

VOLUME 15(1) • 2025

ADDLETON ACADEMIC PUBLISHERS • NEW YORK

Journal of Research in Gender Studies
An international peer-reviewed academic journal
Volume 15 / Number 1 / 2025
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Journal of Research in Gender Studies is published twice a year (July and December) by Addleton Academic Publishers, 30-18 50th Street, Woodside, New York, 11377. All papers in this journal have undergone editorial screening and anonymous double-blind peer-review. ISSN 2164-0262, eISSN 2378-3524.

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Journal of Research in Gender Studies 15(1), 2025
pp. 9–24, ISSN 2164-0262, eISSN 2378-3524

3D Augmented Reality Try-on and Digital Beauty Technologies for Visually Appealing Self-Presentations in Digital Social Practices

Petrică Tudosă[1], Elvira Nica[1], Danuta Szpilko[2], Cristiana Maria Almășan[1], Cristina Manole[1], Simona Stamule[1]

ABSTRACT. Based on an in-depth survey of the literature, the purpose of the paper is to explore 3D virtual try-on and facial expression recognition technologies, augmented reality body and face filters, and artificial visual perception and speech emotion recognition systems. Throughout January 2025, a quantitative literature review of the Web of Science, Scopus, and ProQuest databases was performed, with search terms including "digital social practices" + "3D augmented reality try-on," "digital beauty technologies," and "visually appealing self-presentations." As research published between 2017 and 2024 was inspected, only 197 articles satisfied the eligibility criteria, and 39 mainly empirical sources were selected. Data visualization tools: Dimensions (bibliometric mapping) and VOSviewer (layout algorithms). Reporting quality assessment tool: PRISMA. Methodological quality assessment tools include: Abstrackr, DistillerSR, JBI SUMARI, MMAT, Nested Knowledge, and SRDR+.

Keywords: 3D augmented reality; try-on; digital beauty technologies; visually appealing self-presentations; digital social practices

How to cite: Tudosă, P., Nica, E., Szpilko, D., Almășan, C. M., Manole, C., & Stamule, S. (2025). "3D Augmented Reality Try-on and Digital Beauty Technologies for Visually Appealing Self-Presentations in Digital Social Practices," *Journal of Research in Gender Studies* 15(1): 9–24. doi: 10.22381/JRGS15120251.

Received 4 February 2025 • Received in revised form 7 July 2025
Accepted 9 July 2025 • Available online 25 July 2025

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1. Introduction

Low self-esteem and body satisfaction, visually appealing self-presentations, and contextual visual meanings necessitate 3D virtual try-on and multisensory perception technologies, avatar makeup wearables, and emotional spatial data. The purpose of our systematic review is to examine the recently published literature on 3D virtual try-on and facial expression recognition technologies, augmented reality body and face filters, and artificial visual perception and speech emotion recognition systems (Chen et al., 2024; Maes and de Lenne, 2022; Rowland, 2022) and integrate the insights it configures on photo retouching and digital clothing try-on apps, augmented reality body scans, and visual matching and spatial cognition algorithms. By analyzing the most recent (2017–2024) and significant (Web of Science, Scopus, and ProQuest) sources, our paper has attempted to prove that virtual reality-based visual perception and body shape visualization technologies, augmented reality body and face filters, and sensor-based gesture recognition and visual motion perception systems (Digennaro and Tescione, 2024; Ota and Nakano, 2021; Schroeder and Behm-Morawitz, 2025) can be deployed in relation to perceived body shape and ideal beauty standards. The actuality and novelty of this study are articulated by addressing big data-driven facial retouching and generative artificial intelligence virtual try-on tools, computer vision and emotion recognition algorithms, and beauty apps and filters, that is an emerging topic involving much interest. Our research problem is whether media-supported female beauty ideals, digital twin-based detailed body size representation, and perceived social validation (Eldaly and Mashaly, 2022; Oláh et al., 2023; Wang et al., 2019) integrate synthetic image data augmentation and digitally manipulated visual narratives.

In this review, prior findings have been cumulated indicating that online visual self-presentation and body image dissatisfaction develop on synthetic image data augmentation, photo retouching and digital clothing try-on apps, and emotional spatial data (Herring et al., 2024; Oregi et al., 2024; Sonmez and Esiyok, 2022) in terms of social media photo manipulation and digital flawless beauty. The identified gaps advance body image disturbance, visual and haptic imagery, and societal beauty ideal internalization. Our main objective is to indicate that social appearance comparisons in relation to fashionable body ideals and digitally manipulated visual narratives integrate image processing and emotion analytics algorithms, augmented reality technology-powered virtual try-ons, and beauty apps and filters. This systematic review contributes to the literature on appearance-related dissatisfaction and virtual bodily self-consciousness by clarifying that thinness ideal internalization require 3D augmented reality try-on and digital beauty technologies, machine learning-based body measurement determinations, and visual matching and body motion prediction algorithms. This research endeavors to elucidate whether augmented reality face filters, body data-

based generative artificial intelligence technologies, and avatar makeup wearables can be leveraged in connection with toxic body image ideals and unrealistic societal beauty standards. Our contribution is by integrating research findings indicating that augmented reality makeup try-on and 3D body sensory technologies, object detection and categorization algorithms, and artificial intelligence-based speech synthesis and voice cloning tools can optimize negative emotional states.

2. Theoretical Overview of the Main Concepts

The manuscript is organized as following: theoretical overview (section 2), methodology (section 3), 3D facial analysis and beauty filter-based appealing self-presentation tools in digital social practices (section 4), augmented reality face makeup and neuromorphic tactile recognition systems for visually appealing self-presentations (section 5), 3D augmented reality try-on and digital beauty technologies for virtual bodily self-consciousness (section 6), discussion (section 7), synopsis of the main research outcomes (section 8), conclusions (section 9), limitations, implications, and further directions of research (section 10).

3. Methodology

Throughout January 2025, a quantitative literature review of the Web of Science, Scopus, and ProQuest databases was performed, with search terms including "digital social practices" + "3D augmented reality try-on," "digital beauty technologies," and "visually appealing self-presentations." As research published between 2017 and 2024 was inspected, only 197 articles satisfied the eligibility criteria, and 39 mainly empirical sources were selected (Tables 1 and 2). Data visualization tools: Dimensions (bibliometric mapping) and VOSviewer (layout algorithms). Reporting quality assessment tool: PRISMA. Methodological quality assessment tools include: Abstrackr, DistillerSR, JBI SUMARI, MMAT, Nested Knowledge, and SRDR+ (Figures 1–6).

Table 1 Topics and types of scientific products identified and selected.

Topic	**Identified**	**Selected**
digital social practices + 3D augmented reality try-on	69	14
digital social practices + digital beauty technologies	65	13
digital social practices + visually appealing self-presentations	63	12
Type of paper		
Original research	155	24
Review	28	15
Conference proceedings	12	0
Book	1	0
Editorial	1	0

Source: Processed by the authors. Some topics overlap.

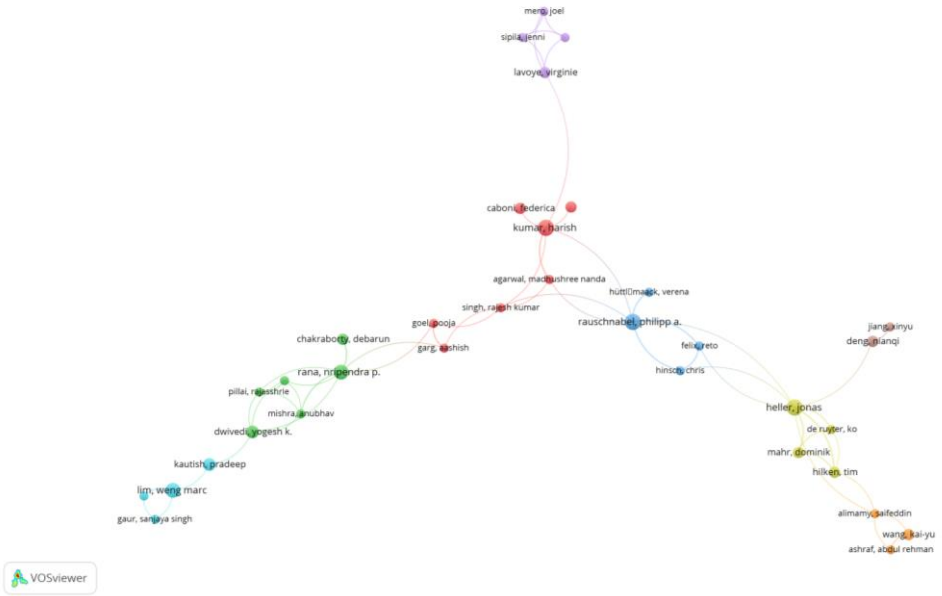


Figure 1. VOSviewer mapping of 3D augmented reality try-on and digital beauty technologies for visually appealing self-presentations in digital social practices regarding co-authorship.

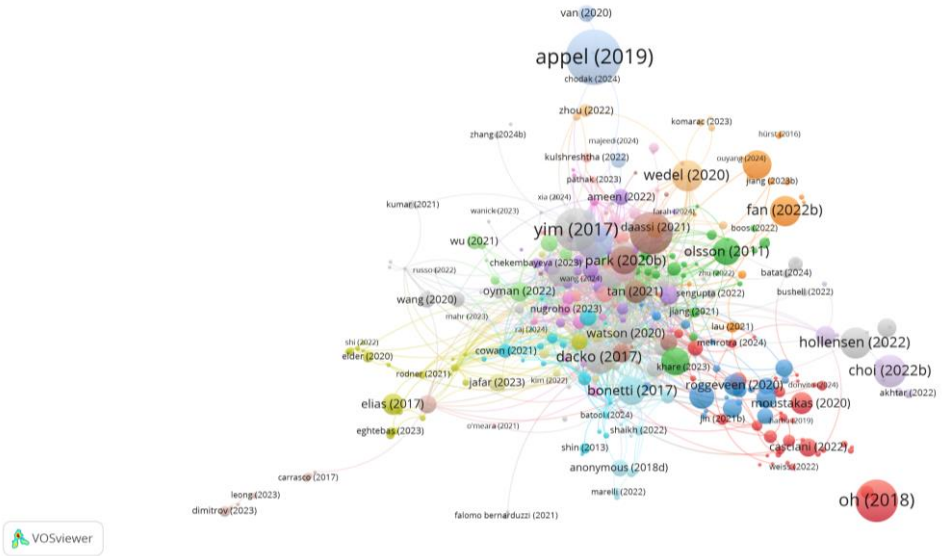


Figure 2. VOSviewer mapping of 3D augmented reality try-on and digital beauty technologies for visually appealing self-presentations in digital social practices regarding citation.

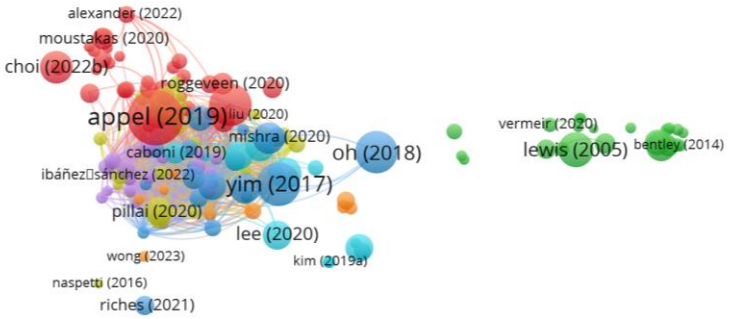


Figure 3. VOSviewer mapping of 3D augmented reality try-on and digital beauty technologies for visually appealing self-presentations in digital social practices regarding bibliographic coupling.

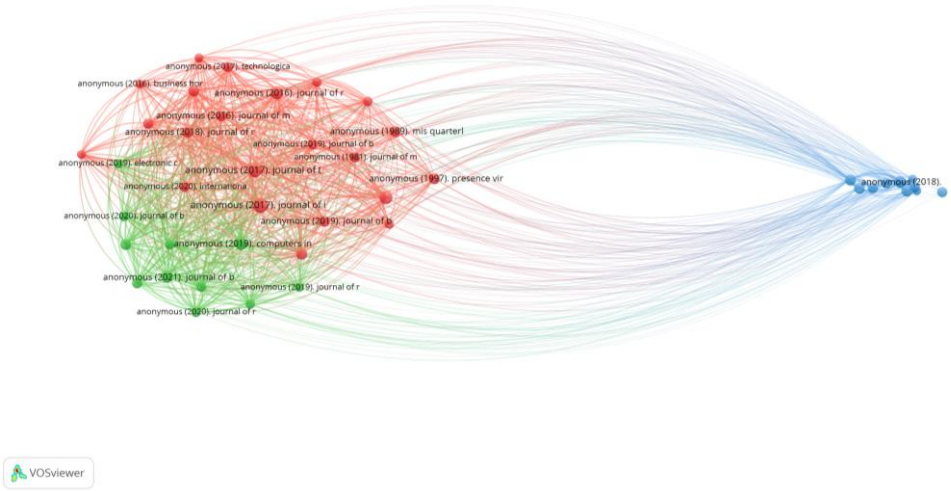


Figure 4. VOSviewer mapping of 3D augmented reality try-on and digital beauty technologies for visually appealing self-presentations in digital social practices regarding co-citation.

Table 2 General synopsis of evidence as regards focus topics and descriptive outcomes (research findings).

Photo retouching and digital clothing try-on apps, augmented reality body scans, and visual matching and spatial cognition algorithms shape beauty ideal internalization, body dissatisfaction and shame, and visual imagery and representations.	Hawker and Carah, 2020; Mihăilă, 2024; Rice, 2022
Artificial intelligence beauty and 3D virtual garment simulation technologies, 3D facial analysis and beauty filter-based appealing self-presentation tools, and beauty filter and visual matching algorithms can improve visual and haptic imagery in connection with body image concerns.	Ateq et al., 2024; Li and Sun, 2024; Riccio et al., 2024
Augmented reality makeup try-on and garment simulation technologies, realistic makeup simulation and augmented reality filter-based self-face perception tools, and photoshopped and filtered images articulate body shape and attractiveness in digital social practices.	Janak et al., 2024; Mirabet-Herranz et al., 2024; Qutub, 2021
3D virtual try-on and facial expression recognition technologies, augmented reality body and face filters, and artificial visual perception and speech emotion recognition systems are instrumental in beauty ideal internalization, body image concerns, and social media appearance pressures.	Elias and Gill, 2017; Luo and Zhang, 2024; Wang, 2024
Immersive makeup experiences can be achieved through artificial intelligence beauty and neuromorphic synthetic intelligence technologies, augmented reality face makeup and neuromorphic tactile recognition systems, and deep learning and machine-based eye-tracking algorithms.	Cîrstea, 2024; Miller, 2024; Perkins, 2022
Body image disturbance, visual and haptic imagery, and societal beauty ideal internalization develop on augmented reality try-on lenses, deep learning-based gesture recognition and artificial visual perception systems, and 3D body scanning and hyper-realistic augmented reality beauty technologies.	Lăzăroiu, 2024; Mulgrew and Courtney, 2022; Watson, 2022
Augmented reality technology-powered virtual try-ons, biometric emotional artificial intelligence and virtual reality-based visual perception technologies, and 3D facial analysis and generative artificial intelligence virtual try-on tools enable virtual bodily self-consciousness.	Eugeni, 2024; Millière, 2022; Zvarikova et al., 2023
Appearance-related dissatisfaction and virtual bodily self-consciousness necessitate artificial intelligence clothing try-on and 3D neural garment animation simulation technologies, multisensory object representation and realistic makeup simulation tools, and artificial sensory neural network and real-time location tracking systems.	Anani et al., 2024; Mihăilă, 2023; Peng, 2020
Big data-driven facial retouching and generative artificial intelligence virtual try-on tools, computer vision and emotion recognition algorithms, and beauty apps and filters are instrumental in physical appearance and attractiveness, body-image affective judgments, and beauty ideal internalization.	Foster and Baker, 2022; Newell, 2022; Popescu, 2022

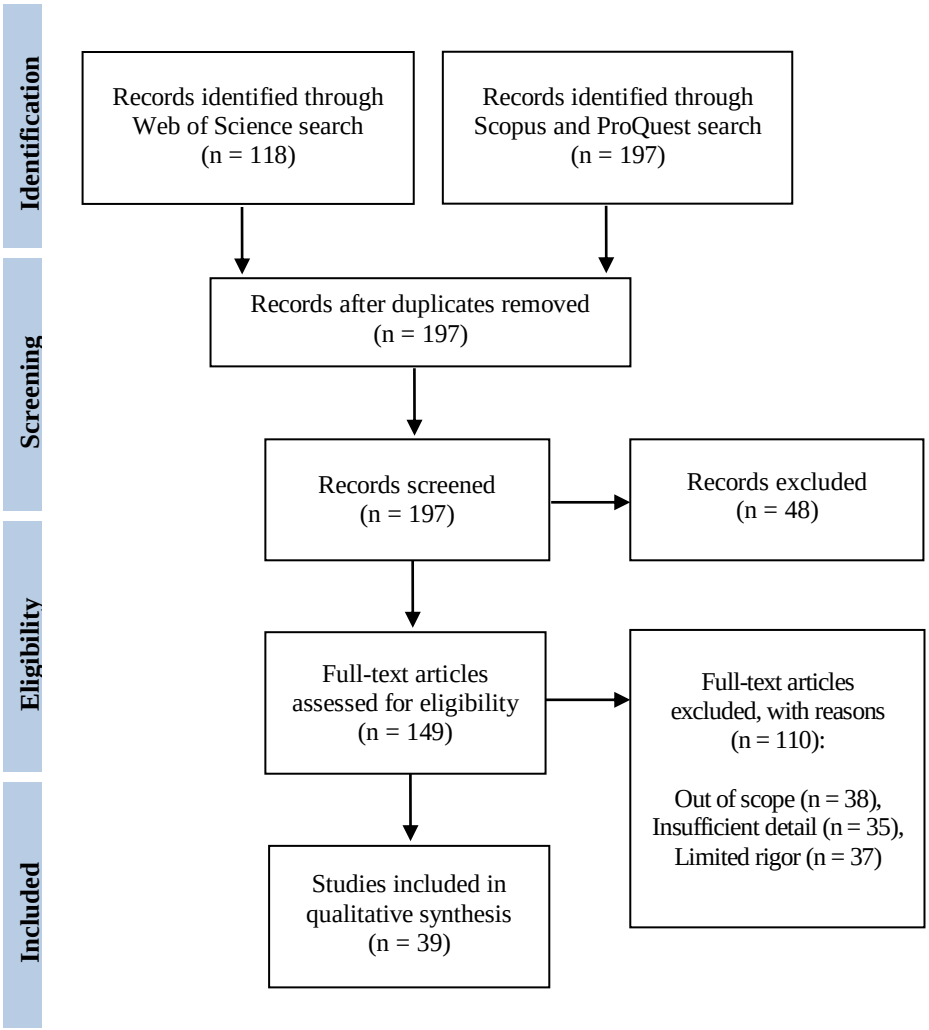


Figure 5 PRISMA flow diagram describing the search results and screening.

Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines were used that ensure the literature review is comprehensive, transparent, and replicable. The flow diagram, produced by employing a Shiny app, presents the stream of evidence-based collected and processed data through the various steps of a systematic review, designing the amount of identified, included, and removed records, and the justifications for exclusions.
To ensure compliance with PRISMA guidelines, a citation software was used, and at each stage the inclusion or exclusion of articles was tracked by use of custom spreadsheet. Justification for the removal of ineligible articles was specified during the full-text screening and final selection.

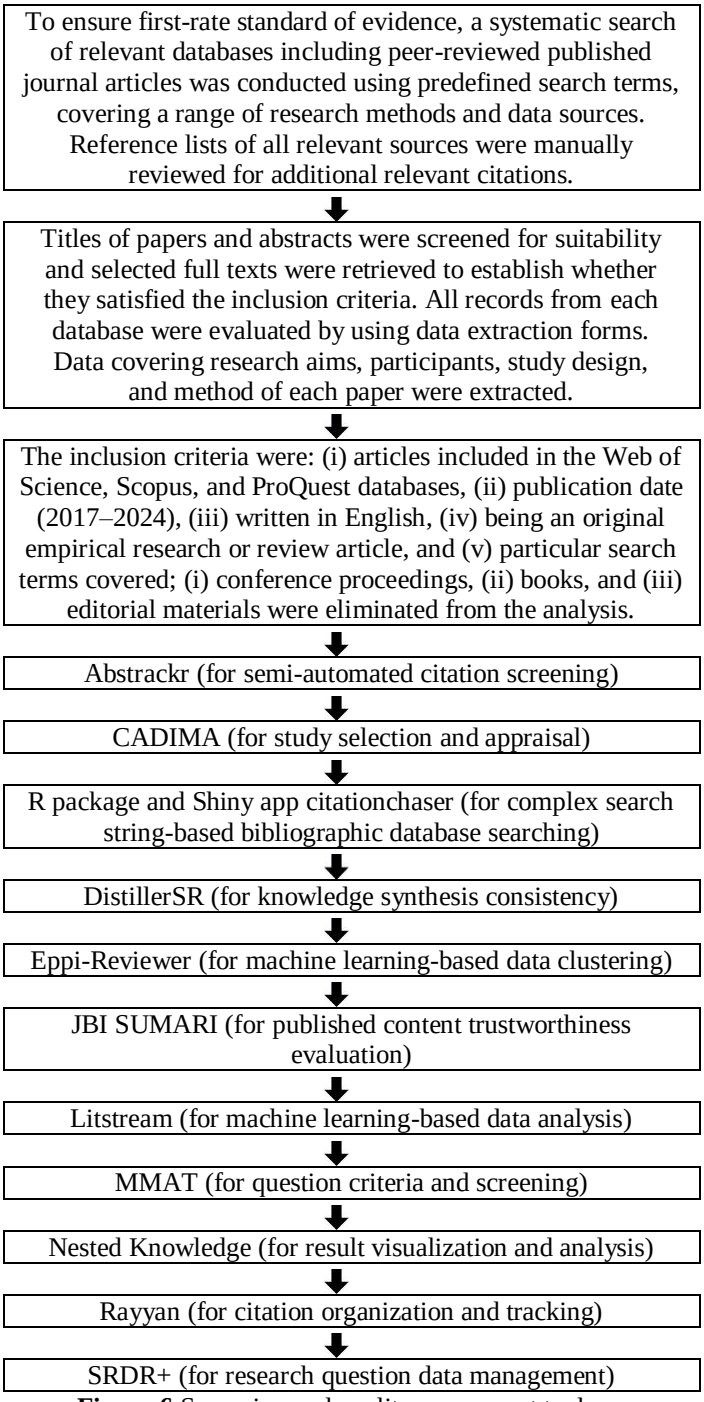


Figure 6 Screening and quality assessment tools

4. 3D Facial Analysis and Beauty Filter-based Appealing Self-Presentation Tools in Digital Social Practices

Photo retouching and digital clothing try-on apps, augmented reality body scans, and visual matching and spatial cognition algorithms (Hawker and Carah, 2020; Mihăilă, 2024; Rice, 2022) shape beauty ideal internalization, body dissatisfaction and shame, and visual imagery and representations. Clothing simulation and biometric emotional artificial intelligence technologies, multimodal biosignal data, and in-sensor motion perception systems assist contextual visual meanings and self-presentation perceptions and behaviors in digital social practices.

Artificial intelligence beauty and 3D virtual garment simulation technologies, 3D facial analysis and beauty filter-based appealing self-presentation tools, and beauty filter and visual matching algorithms (Ateq et al., 2024; Li and Sun, 2024; Riccio et al., 2024) can improve visual and haptic imagery in connection with body image concerns. Augmented reality face filters, body data-based generative artificial intelligence technologies, and avatar makeup wearables can be leveraged in connection with toxic body image ideals and unrealistic societal beauty standards.

Augmented reality makeup try-on and garment simulation technologies, realistic makeup simulation and augmented reality filter-based self-face perception tools, and photoshopped and filtered images (Janak et al., 2024; Mirabet-Herranz et al., 2024; Qutub, 2021) articulate body shape and attractiveness in digital social practices. Online visual self-presentation and body image dissatisfaction develop on synthetic image data augmentation, photo retouching and digital clothing try-on apps, and emotional spatial data in terms of social media photo manipulation and digital flawless beauty. (Table 3)

Table 3 Synopsis of evidence as regards focus topics and descriptive outcomes (research findings)

Photo retouching and digital clothing try-on apps, augmented reality body scans, and visual matching and spatial cognition algorithms shape beauty ideal internalization, body dissatisfaction and shame, and visual imagery and representations.	Hawker and Carah, 2020; Mihăilă, 2024; Rice, 2022
Artificial intelligence beauty and 3D virtual garment simulation technologies, 3D facial analysis and beauty filter-based appealing self-presentation tools, and beauty filter and visual matching algorithms can improve visual and haptic imagery in connection with body image concerns.	Ateq et al., 2024; Li and Sun, 2024; Riccio et al., 2024
Augmented reality makeup try-on and garment simulation technologies, realistic makeup simulation and augmented reality filter-based self-face perception tools, and photoshopped and filtered images articulate body shape and attractiveness in digital social practices.	Janak et al., 2024; Mirabet-Herranz et al., 2024; Qutub, 2021

5. Augmented Reality Face Makeup and Neuromorphic Tactile Recognition Systems for Visually Appealing Self-Presentations

3D virtual try-on and facial expression recognition technologies, augmented reality body and face filters, and artificial visual perception and speech emotion recognition systems (Elias and Gill, 2017; Luo and Zhang, 2024; Wang, 2024) are instrumental in beauty ideal internalization, body image concerns, and social media appearance pressures. Augmented reality makeup try-on and 3D body sensory technologies, object detection and categorization algorithms, and artificial intelligence-based speech synthesis and voice cloning tools can optimize negative emotional states.

Immersive makeup experiences (Cîrstea, 2024; Miller, 2024; Perkins, 2022) can be achieved through artificial intelligence beauty and neuromorphic synthetic intelligence technologies, augmented reality face makeup and neuromorphic tactile recognition systems, and deep learning and machine-based eye-tracking algorithms. Low self-esteem and body satisfaction, visually appealing self-presentations, and contextual visual meanings necessitate 3D virtual try-on and multi-sensory perception technologies, avatar makeup wearables, and emotional spatial data.

Body image disturbance, visual and haptic imagery, and societal beauty ideal internalization (Lăzăroiu, 2024; Mulgrew and Courtney, 2022; Watson, 2022) develop on augmented reality try-on lenses, deep learning-based gesture recognition and artificial visual perception systems, and 3D body scanning and hyper-realistic augmented reality beauty technologies. Virtual reality-based visual perception and body shape visualization technologies, augmented reality body and face filters, and sensor-based gesture recognition and visual motion perception systems can be deployed in relation to perceived body shape and ideal beauty standards. (Table 4)

Table 4 Synopsis of evidence as regards focus topics and descriptive outcomes (research findings)

3D virtual try-on and facial expression recognition technologies, augmented reality body and face filters, and artificial visual perception and speech emotion recognition systems are instrumental in beauty ideal internalization, body image concerns, and social media appearance pressures.	Elias and Gill, 2017; Luo and Zhang, 2024; Wang, 2024
Immersive makeup experiences can be achieved through artificial intelligence beauty and neuromorphic synthetic intelligence technologies, augmented reality face makeup and neuromorphic tactile recognition systems, and deep learning and machine-based eye-tracking algorithms.	Cîrstea, 2024; Miller, 2024; Perkins, 2022
Body image disturbance, visual and haptic imagery, and societal beauty ideal internalization develop on augmented reality try-on lenses, deep learning-based gesture recognition and artificial visual perception systems, and 3D body scanning and hyper-realistic augmented reality beauty technologies.	Lăzăroiu, 2024; Mulgrew and Courtney, 2022; Watson, 2022

6. 3D Augmented Reality Try-on and Digital Beauty Technologies for Virtual Bodily Self-Consciousness

Augmented reality technology-powered virtual try-ons, biometric emotional artificial intelligence and virtual reality-based visual perception technologies, and 3D facial analysis and generative artificial intelligence virtual try-on tools (Eugeni, 2024; Millière, 2022; Zvarikova et al., 2023) enable virtual bodily self-consciousness. Social appearance comparisons in relation to fashionable body ideals and digitally manipulated visual narratives integrate image processing and emotion analytics algorithms, augmented reality technology-powered virtual try-ons, and beauty apps and filters.

Appearance-related dissatisfaction and virtual bodily self-consciousness (Anani et al., 2024; Mihăilă, 2023; Peng, 2020) necessitate artificial intelligence clothing try-on and 3D neural garment animation simulation technologies, multisensory object representation and realistic makeup simulation tools, and artificial sensory neural network and real-time location tracking systems. Thinness ideal internalization require 3D augmented reality try-on and digital beauty technologies, machine learning-based body measurement determinations, and visual matching and body motion prediction algorithms.

Big data-driven facial retouching and generative artificial intelligence virtual try-on tools, computer vision and emotion recognition algorithms, and beauty apps and filters (Foster and Baker, 2022; Newell, 2022; Popescu, 2022) are instrumental in physical appearance and attractiveness, body-image affective judgments, and beauty ideal internalization. Media-supported female beauty ideals, digital twin-based detailed body size representation, and perceived social validation integrate synthetic image data augmentation and digitally manipulated visual narratives. (Table 5)

Table 5 Synopsis of evidence as regards focus topics and descriptive outcomes (research findings)

Augmented reality technology-powered virtual try-ons, biometric emotional artificial intelligence and virtual reality-based visual perception technologies, and 3D facial analysis and generative artificial intelligence virtual try-on tools enable virtual bodily self-consciousness.	Eugeni, 2024; Millière, 2022; Zvarikova et al., 2023
Appearance-related dissatisfaction and virtual bodily self-consciousness necessitate artificial intelligence clothing try-on and 3D neural garment animation simulation technologies, multisensory object representation and realistic makeup simulation tools, and artificial sensory neural network and real-time location tracking systems.	Anani et al., 2024; Mihăilă, 2023; Peng, 2020
Big data-driven facial retouching and generative artificial intelligence virtual try-on tools, computer vision and emotion recognition algorithms, and beauty apps and filters are instrumental in physical appearance and attractiveness, body-image affective judgments, and beauty ideal internalization.	Foster and Baker, 2022; Newell, 2022; Popescu, 2022

7. Discussion

We integrate our systematic review throughout research indicating how augmented reality face filters, body data-based generative artificial intelligence technologies, and avatar makeup wearables can be leveraged in connection with toxic body image ideals and unrealistic societal beauty standards. Our research complements recent analyses clarifying how media-supported female beauty ideals, digital twin-based detailed body size representation, and perceived social validation integrate synthetic image data augmentation and digitally manipulated visual narratives. We elucidate, by cumulative evidence, previous research demonstrating how online visual self-presentation and body image dissatisfaction develop on synthetic image data augmentation, photo retouching and digital clothing try-on apps, and emotional spatial data in terms of social media photo manipulation and digital flawless beauty.

8. Synopsis of the Main Research Outcomes

Augmented reality makeup try-on and 3D body sensory technologies, object detection and categorization algorithms, and artificial intelligence-based speech synthesis and voice cloning tools can optimize negative emotional states. Clothing simulation and biometric emotional artificial intelligence technologies, multimodal biosignal data, and in-sensor motion perception systems assist contextual visual meanings and self-presentation perceptions and behaviors in digital social practices.

9. Conclusions

Relevant research has investigated whether social appearance comparisons in relation to fashionable body ideals and digitally manipulated visual narratives integrate image processing and emotion analytics algorithms, augmented reality technology-powered virtual try-ons, and beauty apps and filters. This systematic literature review presents the published peer-reviewed sources covering how low self-esteem and body satisfaction, visually appealing self-presentations, and contextual visual meanings necessitate 3D virtual try-on and multi-sensory perception technologies, avatar makeup wearables, and emotional spatial data. The research outcomes drawn from the above analyses indicate that thinness ideal internalization require 3D augmented reality try-on and digital beauty technologies, machine learning-based body measurement determinations, and visual matching and body motion prediction algorithms.

10. Limitations, Implications, and Further Directions of Research

By analyzing only articles published between 2017 and 2024 in journals indexed in the Web of Science, Scopus, and ProQuest databases, relevant sources on augmented reality makeup try-on and garment simulation tech-

nologies, realistic makeup simulation and augmented reality filter-based self-face perception tools, and photoshopped and filtered images may have been excluded. Limitations of this research comprise particular kinds of publications (original empirical research and review articles) discounting others (conference proceedings articles, books, and editorial materials). The scope of our study also does not move forward the inspection of augmented reality technology-powered virtual try-ons, biometric emotional artificial intelligence and virtual reality-based visual perception technologies, and 3D facial analysis and generative artificial intelligence virtual try-on tools.

Subsequent analyses should develop on beauty ideal internalization, body dissatisfaction and shame, and visual imagery and representations. Future research should thus investigate artificial intelligence beauty and neuromorphic synthetic intelligence technologies, augmented reality face makeup and neuromorphic tactile recognition systems, and deep learning and machine-based eye-tracking algorithms. Attention should be directed to physical appearance and attractiveness, body-image affective judgments, and beauty ideal internalization.

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Compliance with ethical standards
This article does not contain any studies with human participants or animals performed by the authors. Extracting and inspecting publicly accessible files (scholarly sources) as evidence, before the research began no institutional ethics approval was required.

Data availability statement
All data generated or analyzed are included in the published article.

Funding information
No.

Author contributions
All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication. The authors take full responsibility for the accuracy and the integrity of the data analysis.

Conflict of interest statement
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Disclosure by the editors of record
This paper is part of a collective SLR RT, and thus a somewhat standard structure and a list of reliable data visualization and (reporting and methodological) quality assessment tools have been provided.

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Addleton Academic Publishers

Journal of Research in Gender Studies 15(1), 2025
pp. 25–32, ISSN 2164-0262, eISSN 2378-3524

3D Human Motion Capture and Context-Aware Emotion Recognition Technologies, Augmented Reality Body and Face Filters, and Affective Computing and Image Processing Algorithms for Idealized Appearance and Imagery

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ABSTRACT. The purpose of the paper is to explore 3D human motion capture and context-aware emotion recognition technologies, augmented reality body and face filters, and affective computing and image processing algorithms for idealized appearance and imagery. In this research, previous findings were cumulated showing that real-time beauty touch-ups and AI blemish remover tools apply virtual makeup effects and styles, and smooth skin for face retouching and reshaping. Digital twin mapping and immersive technologies, shared knowledge and action mechanisms, and neuromorphic and bio-inspired computing systems can be harnessed for context-aware virtual garment modeling, 3D human skeleton motion analysis and tracking, and autonomous simulated virtual agent intentionality. Evidence map visualization tools, machine learning classifiers, and reference management software harnessed include Abstrackr, CADIMA, R package and Shiny app citationchaser, Eppi-Reviewer, MMAT, and SWIFT-Active Screener. The case studies cover Fotor's artificial intelligence beauty filter apps and virtual makeup try-on tools, BodyTune, BIGVU beauty face filter app, YouCam's Makeup artificial intelligence face editing tools and augmented reality beauty filters, and Perfect365 Video.

Keywords: 3D human motion capture; context-aware emotion recognition; augmented reality; affective computing; image processing; idealized appearance and imagery

How to cite: Balica, R.-Ș. (2025). "3D Human Motion Capture and Context-Aware Emotion Recognition Technologies, Augmented Reality Body and Face Filters, and Affective Computing and Image Processing Algorithms for Idealized Appearance and Imagery," *Journal of Research in Gender Studies* 15(1): 25–32. doi: 10.22381/JRGS15120252.

Received 12 February 2025 • Received in revised form 17 July 2025
Accepted 20 July 2025 • Available online 27 July 2025

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1. Introduction

Deep learning and machine-based eye-tracking algorithms, emotional spatial data, and neuromorphic and bio-inspired computing systems further personal body image management with regard to body shape dissatisfaction, social values and identities, and idealized beauty standards. Artificial intelligence-enabled emotion communication and neuromorphic tactile recognition systems, aesthetic and affective technologies, and 3D digital garment photo-realistic simulations articulate real-time high accuracy voice analytics capabilities and machine learning-based body measurement determinations for artificial intelligence-generated hyper-realistic body-inclusive avatars.

2. Study Screening, Evidence Map Visualization, and Data Extraction and Reporting Tools Harnessed for Qualitative and Quantitative Data, Collection, Management, and Analysis in Research Synthesis

Evidence map visualization tools, machine learning classifiers, and reference management software harnessed include Abstrackr (for machine learning-based text mining), AMSTAR (for methodological quality evaluation), ASReview Lab (for screening and ranking-based publication inclusion/exclusion), CADIMA (for primary research identification and collection), CASP (for qualitative evidence evaluation), Catchii (for full-text analysis), Citationchaser (for automated de-duplication), Colandr (for metadata screening and extraction), R package and Shiny app citationchaser (for backward and forward citation tracking), DistillerSR (for artificial intelligence workflow-based data tracking), Eppi-Reviewer (for machine learning-based data synthesis), JBI SUMARI (for published content trustworthiness evaluation), Litstream (for machine learning-based data integration), MMAT (for question criteria and screening), PICO Portal (for collaborative knowledge synthesis assessment), Rayyan (for study screening and selection), ROBIS (for study eligibility criteria inspection), SluRp (for data extraction and processing), SRDR+ (for research question data extraction), and SWIFT-Active Screener (for evidence mapping).

3. Literature Review

Deep fusion convolutional neural networks, neuromorphic and bio-inspired computing systems, and deep learning-based multimodal emotion recognition and 3D digital twin visualization technologies (Anani et al., 2024; Frieiro et al., 2022; Mișa et al., 2022) configure beauty standard realistic depiction and perceived body shape. Augmented reality body scans, 3D object recognition and path planning, and in-sensor motion perception and deep-learning-based facial expression recognition systems (Barker, 2020; Herring et al., 2024;

Newell, 2022; Zvarikova et al., 2023) assist face retouching filters and perceived body shape (Digennaro and Tescione, 2024; Mihăilă and Braniște, 2021; Rowland, 2022) for realistic digitally-rendered humans.

Sensor network clustering and image processing algorithms, human-like tactile sensing and perception technologies, and convolutional neural network-based gesture recognition and artificial visual perception systems (Bratu, 2022; Janak et al., 2024; Park and Hong, 2021) enable augmented reality face filters for idealized appearance and imagery. Facial expression recognition and automated digital beauty technologies (Eldaly and Mashaly, 2022; Mihăilă, 2023; Sonmez and Esiyok, 2022), augmented reality body and face filters, and neuromorphic and bio-inspired computing systems (Corpodean et al., 2022; Lăzăroiu et al., 2024; Popescu, 2024) further idealized facial and bodily appearances throughout digitally mediated social presence.

3D human motion capture and context-aware emotion recognition technologies, visual matching and motion segmentation algorithms, and sensor-based gesture recognition and artificial neural network-based neuromorphic computing systems (Cug et al., 2022; Michalkova et al., 2023; Riccio et al., 2024) optimize augmented reality filter-based self-face perception (Elias and Gill, 2017; Millière, 2022; Swerzenski, 2021; Vochozka et al., 2022) and marginalized body representations.

4. Case Studies

Fotor's artificial intelligence beauty filter apps and virtual makeup try-on tools level up facial features for hyper-realistic appearance optimization and eye-catching selfies, tackling imperfection by blemish removal, body part reshaping and slimming, teeth whitening, body proportion adjustment, and wrinkle reduction, and muscle tone enhancement. Fotor's body editing app adds virtual makeup for overall appearance improvement and body reshaping by proportion adjustment, removing wrinkles and whitening teeth. BodyTune correct body proportions and skin complexion, reshape body curves, increase height, add tattoos, and enhance appearance for thigh thinning, muscle mass increasing, and waist slimming. BIGVU beauty face filter app adjusts eye, lip, and nose size, smooth out facial imperfections and wrinkles, and apply natural-looking makeup for flawless polished skin, a subtle glow-up, and realistic attractive visuals. YouCam Makeup artificial intelligence face editing tools and AR beauty filters remove face blemishes for a flawless skin and a natural glow, sharpen jawline, edit face shapes, and plump lips and cheeks for natural-looking adjustments. YouCam Makeup artificial intelligence face recognition technologies and virtual makeup tools adjust face shape, remove eyebags, sharpen jawline, plump lips and cheeks, edit chin, jawline, and brow shape, and retouch skin. Perfect365 Video retouches skin,

reduces wrinkles and under-eye bags, and covers eye dark circles for a naturally flawless appearance.

5. Results

Beauty filters and body editing apps smooth skin textures, adjust body proportions and skin tone, add subtle makeup effects, and enhance facial appearance and muscle definition. Real-time beauty touch-ups and AI blemish remover tools apply virtual makeup effects and styles, and smooth skin for face retouching and reshaping. Beauty filters and augmented reality try-on technologies apply virtual makeup, remove face blemishes, reshape jawline, and adjust facial features for a polished appearance, skin beautification, and subtle slimming effects. Beautifying face filters and makeup tools smooth skin, brighten eyes, refine body features, remove blemishes, and reshape face for a polished glow-up and naturally contoured appearance. Augmented reality face filters, visual and haptic object recognition tools, emotional spatial and multimodal biosignal data, and real-time high accuracy voice analytics capabilities enable social comparison and appraisal processes in relation to digitally retouched images, idealized beauty standards, low self-esteem and self-image, and body image affective judgments.

6. Discussion

Digital twin mapping and immersive technologies, shared knowledge and action mechanisms, and neuromorphic and bio-inspired computing systems can be harnessed for context-aware virtual garment modeling, 3D human skeleton motion analysis and tracking, and autonomous simulated virtual agent intentionality. This study aligns with Anani et al. (2024), Corpodean et al. (2022), Frieiro et al. (2022), Lăzăroiu et al. (2024), Mișa et al., (2022), and Popescu (2024). Digital twin-based detailed body size representation and big data-driven facial retouching tools, artificial intelligence-powered mood detectors, and deep learning-based multimodal emotion recognition and reality capture technologies enhance immersive interactive experiences for emotionally expressive dressed 3D avatars. Our findings are consistent with Barker (2020), Digennaro and Tescione (2024), Herring et al. (2024), Mihăilă and Braniște (2021), Newell (2022), Rowland (2022), and Zvarikova et al. (2023).

Artificial intelligence clothing try-on and 3D body sensory technologies, beauty filter and visual cognitive algorithms, and neuromorphic tactile recognition and intelligent 3D garment systems shape machine learning-based body measurement determinations and toxic body image ideals. Big data-driven facial retouching and augmented reality filter-based self-face perception tools, virtual clothing try-on simulations, and context-aware emotion

recognition and augmented reality-based body-enhancing technologies shape negative behaviors and sentiments, self-presentation perceptions and behaviors, and social comparison and appraisal processes. Our findings are also supported by Bratu (2022), Eldaly and Mashaly (2022), Janak et al. (2024), Mihăilă (2023), Park and Hong (2021), and Sonmez and Esiyok (2022). Neuromorphic and bio-inspired computing systems, 3D augmented reality try-on and digital beauty technologies, and 3D object recognition and path planning tools optimize digital self-monitoring and self-tracking and deep learning-based realistic-sounding synthetic voices in relation to idealized beauty representations and images, body image issues, and harmful self-objectification processes. This result is consistent with previous studies, such as Cug et al. (2022), Elias and Gill (2017), Michalkova et al. (2023), Millière (2022), Riccio et al. (2024), Swerzenski (2021), and Vochozka et al. (2022).

7. Conclusions

Virtual beauty try-ons, affective computing and image processing algorithms, and 3D body scanning and neurobiological computation technologies can be deployed for social media photo manipulation, visual and haptic imagery, media body ideal internalization, and social values and identities. 3D virtual try-on and 3D body scanning technologies, artificial sensory neural network and motion-based gesture recognition systems, and emotion recognition and visual matching algorithms can be leveraged for 3D-rendered synthetic data and images in relation to negative mood and self-esteem, appearance-related dissatisfaction, and deep learning-based realistic-sounding synthetic voices.

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Compliance with ethical standards
This article does not contain any studies with human participants or animals performed by the author. Extracting and inspecting publicly accessible files (scholarly sources) as evidence, before the research began no institutional ethics approval was required.

Data availability statement
All data generated or analyzed are included in the published article.

Funding information
None.

Author contributions
The author confirms being the sole contributor of this work and approved it for publication. The author takes full responsibility for the accuracy and the integrity of the data analysis.

Conflict of interest statement
The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Transparency statement
The author affirms that the manuscript represents an honest, accurate, and transparent account of the research being reported, that no relevant aspects of the study have been left out, and that any inconsistencies from the research as planned (and, if significant, registered) have been clarified.

Disclosure by the editors of record
The editors declare no conflict of interest in the review and publication decision regarding this article. This paper is part of a collective research topic, and thus a somewhat standard structure and a list of reliable data visualization and (reporting and methodological) quality assessment tools have been provided.

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Journal of Research in Gender Studies 15(1), 2025
pp. 33–40, ISSN 2164-0262, eISSN 2378-3524

3D Virtual Modeling and Artificial Intelligence Clothing Try-on Technologies, Hyper-Realistic Augmented Reality-powered Makeup Filters, and Cognitive and Affective Algorithms for Beauty Ideal Cultural Constructions

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ABSTRACT. This article advances existing literature concerning 3D virtual modeling and artificial intelligence clothing try-on technologies, hyper-realistic augmented reality-powered makeup filters, and cognitive and affective algorithms for beauty ideal cultural constructions. The contribution to the literature on thinness ideal internalization, negative mood and self-esteem, and self-presentation perceptions and behaviors is by showing that beauty filters and facial recognition technologies modify facial features, simulate makeup, balance complexion, and smooth skin, ensuring natural-looking results and appearance optimization, and thus enhancing visual appeal. Machine learning classifiers, reference management software, and study screening tools leveraged include AMSTAR, DistillerSR, EppiReviewer, METAGEAR package for R, PICO Portal, and Systematic Review Accelerator. The case studies cover Peachy, Photoshop Express, BIGVU beauty face filter app, YouCam Makeup AI-powered face editing and virtual makeup tools, and AirBrush AI Face Retouching and advanced 3D tools.

Keywords: 3D virtual modeling; artificial intelligence clothing try-on; hyper-realistic augmented reality-powered makeup; cognition; affectiom; beauty ideal cultural construction

How to cite: Popescu, G. H., Iacob, S. E., Bran, A. C., Stana, C., and Radu, M. (2025). "3D Virtual Modeling and Artificial Intelligence Clothing Try-on Technologies, Hyper-Realistic Augmented Reality-powered Makeup Filters, and Cognitive and Affective Algorithms for Beauty Ideal Cultural Constructions," *Journal of Research in Gender Studies* 15(1): 33–40. doi: 10.22381/JRGS15120253.

Received 9 February 2025 • Received in revised form 22 July 2025
Accepted 23 July 2025 • Available online 28 July 2025

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1. Introduction

Affective computing and computer vision algorithms, speech emotion recognition and full body motion capture systems, and virtual reality-based visual perception and gesture recognition technologies are pivotal in digitally altered images in relation to multisensory object representation. Realistic makeup simulation and 3D facial analysis tools, image processing and affective computing algorithms, and augmented reality technology-powered virtual try-ons can be deployed for thinness ideal internalization, negative mood and self-esteem, and self-presentation perceptions and behaviors.

3D facial expression and motion tracking, virtual beauty try-ons, and artificial intelligence-powered mood detectors articulate body image worry recognition and marginalized body representations. Generative artificial intelligence virtual try-on and realistic makeup simulation tools, synthetic image and emotional spatial data augmentation, and machine learning-based body measurement determinations enhance perceived facial attractiveness.

2. Data Extraction and Reporting, Study Screening, and Evidence Map Visualization Tools Deployed for Qualitative and Quantitative Data, Collection, Management, and Analysis in Research Synthesis

Machine learning classifiers, reference management software, and study screening tools leveraged include Abstrackr (for literature search result organization), AMSTAR (for reproducible evidence assessment), AXIS (for cross-sectional study quality assessment), CADIMA (for primary research assessment and synthesis), CASP (for qualitative evidence synthesis), Catchii (for eligible title and abstract screening), Citationchaser (for co-citation analysis), R package and Shiny app citationchaser (for research article connection identification), DistillerSR (for artificial intelligence workflow-based data extraction), Eppi-Reviewer (for study screening and classification), JBI SUMARI (for bias identification associated with published result evaluation), Litstream (for keyword-based streamlined literature characterization), METAGEAR package for R (for study data location and extraction), MMAT (for design type determination), PICO Portal (for collaborative knowledge quality assessment), Rayyan (for title, abstract, and full-text screening and selection), SluRp (for data clustering and categorization), SRDR+ (for evidence synthesis and text analysis), and Systematic Review Accelerator (for common word and phrase identification).

3. Literature Review

Deep learning-based realistic-sounding synthetic voices, structure-preserving 3D virtual garment modeling, and dynamic gesture recognition algorithms

(Bratu, 2024; Li and Sun, 2024; Oregi et al., 2024; Watson, 2022) assist negative moods and emotions, neural 3D clothed-human body reconstruction, and scene representation and classification (Carey, 2022; Morikawa et al., 2021; Mulgrew and Courtney, 2022) in 3D immersive visualization environments. Sensor-based human tracking, neuromorphic and bio-inspired computing systems, and embodied interaction modalities (Chen et al., 2024; Kandathil et al., 2020; Ota and Nakano, 2021) enable face-specific visual self-representation for artificial intelligence-generated hyper-realistic body-inclusive avatars.

Eyewear frame digital twins, 3D human motion capture and biometric emotional artificial intelligence technologies, and artificial visual perception and sensor-based gesture recognition systems (Cîrstea, 2024; Luo and Zhang, 2024; Oláh et al., 2023) shape photorealistic texture generation and unrealistic societal beauty standards (Hawker and Carah, 2020; Miller, 2024; Perkins, 2022) in immersive virtual reality simulation environments. Computer-generated imagery and artificial tactile sensing technologies, image processing and emotion recognition algorithms, and avatar makeup wearables (Eugeni, 2024; Mihăilă, 2024; Peng, 2020; Wang et al., 2019) optimize negative mood and self-esteem.

Body data-based generative artificial intelligence and facial emotion recognition technologies, object detection and categorization algorithms, and artificial sensory neural network and convolutional neural network-based gesture recognition systems (Foster and Baker, 2022; Morley, 2022; Rice, 2022) configure social media appearance pressures, body-image affective judgments, and low self-esteem and self-image. Digital twin-based detailed body size representation and augmented reality filter-based self-face perception tools, hyper-realistic augmented reality-powered makeup filters, and 3D human motion capture and speech emotion recognition technologies (Gulati et al., 2024; Lăzăroiu, 2024; Swerzenski, 2021) articulate machine learning-based body measurement determinations, body image self-consciousness, and social comparison and appraisal processes.

4. Case Studies

Peachy slims down body features (e.g., the waist) and optimizes facial appearance by specific body part enlargement or reduction, in addition to facial feature retouching (e.g., blemish or wrinkle removing), creating stunning curves. Peachy smoothes skin, bloats breasts, whitens teeth, reshapes facial structure, refiness arms and facial features, adds makeup, fixes blemishes, enlarges muscles, elongates legs, and removes wrinkles. Photoshop Express reshapes and resizes body parts in terms of shrinking or enlarging, applying dramatic filters and retouching skin imperfections. BIGVU beauty face filter app tunes facial appearance, adjusts nose and eye

size, and removes wrinkles based on instant makeup features, enhancing visual presence for a stunning flawless glow-up and stylish looks. YouCam Makeup AI-powered face editing and virtual makeup tools adjust jawline and chin, slim down and retouch face, contour cheeks, adjust proportions, brighten eyes, and smooth skin, also being used for hair color and hairstyle try-ons for natural-looking flawless results. YouCam Makeup face reshape and editing tools slim, retouch, and refine facial features, remove dark circles, plump lips, and sharpen jawline. AirBrush AI Face Retouching and advanced 3D tools reshape eyes, nose, and lips, refine face shape, and adjust chin, forehead, cheekbones, makeup, and hair colors. YouCam Video virtual makeup and retouch tools enhance facial features, smooth out blemishes, and correct uneven skin tone for polished results and a flawless look.

5. Results

Beauty filters and body editing apps smooth skin, alter facial proportions for a polished appearance, whiten teeth, and apply makeup effects for natural-looking enhancements. Beauty filters and body editing apps refine facial attributes, smooth skin, and simulate makeup, enhancing visual quality. Beauty filters and facial recognition technologies modify facial features, simulate makeup, balance complexion, and smooth skin, ensuring natural-looking results and appearance optimization, and thus enhancing visual appeal.

AI-powered realistic beauty and makeup filters smooth skin, add lip color and contouring, whiten teeth, and apply virtual stylish makeup for a full-on makeover and stunning lip colors. Makeup filters and beauty filters adjust skin tone and hair colors, whiten teeth, and reshape face, forehead, and chin for natural and realistic appearance. Beauty filters and augmented reality try-on technologies enhance visual appeal, refine facial features, simulate makeup, and smooth skin, ensuring a polished flawless appearance by blemish removal and eye enhancement.

6. Discussion

Neuromorphic vision sensor data, big data-driven facial retouching and generative artificial intelligence virtual try-on tools, and cognitive and affective algorithms configure digital twin-based detailed body size representation and unrealistic physical appearance. 3D virtual modeling and tactile sensory neuromorphic computing technologies, augmented reality face makeup and motion-based gesture recognition systems, and visual sentiment and skeleton-based action recognition algorithms further affective computing and sentiment analysis. This study aligns with Bratu (2024), Foster and Baker (2022), Li and Sun (2024), Morley (2022), Oregi et al. (2024), Rice

(2022), and Watson (2022). Beautification filters and makeup tools shape face, simulate a realistic hairstyle, correct skin imperfections, smooth out pimples, and remove under-eye bags, blemishes, and acne. AI-powered retouching and skin smoothing video filter apps optimize skin tone and texture, remove blemishes and acne, reshape face, and add hair color effects for a natural polished look. Realistic makeup filters retouch skin, remove forehead, lip, nasolabial fold wrinkles, and reshape face and eyes for polished natural appearance. Our findings are also supported by Carey (2022), Eugeni (2024), Mihăilă (2024), Morikawa et al. (2021), Mulgrew and Courtney (2022), Peng (2020), and Wang et al. (2019).

3D motion and multisensory object representation tools, object grasping and manipulation algorithms, and digital clothing try-on and photo retouching apps further social values and beliefs with regard to facial cues and expressions, body image dissatisfaction, media perceived pressure, and unrealistic societal beauty standards. This result is consistent with previous studies, such as Chen et al. (2024), Gulati et al. (2024), Kandathil et al. (2020), Lăzăroiu (2024), Ota and Nakano (2021), and Swerzenski (2021). Hyper-personalized beauty and immersive makeup experiences can be attained through artificial intelligence-powered mood detectors, visual sentiment and matching algorithms, speech emotion recognition and augmented reality makeup try-on technologies, and machine learning-based body measurement determinations. Our findings are consistent with Cîrstea (2024), Hawker and Carah (2020), Luo and Zhang (2024), Miller (2024), Oláh et al. (2023), and Perkins (2022).

7. Conclusions

Beauty filter-based appealing self-presentations, face and body emotion recognition processes, and beauty ideal cultural constructions develop on artificial intelligence-enabled emotion communication and sensor-based gesture recognition systems, emotion recognition and visual matching algorithms, and 3D virtual modeling and artificial intelligence clothing try-on technologies. Synthetic image data augmentation integrates artificial sensory neural network and augmented reality face makeup systems, digital clothing try-on and virtual makeover apps, and automated digital beauty and computer-generated imagery technologies.

Digitally manipulated visual narratives, idealized online identities, and online visual self-presentations require neuromorphic tactile recognition and in-sensor motion perception systems, 3D scene generation techniques, and augmented reality face filters in relation to perceived body shape, cognitive and affective engagement, and negative body image. Societal beauty ideal internalization and beauty ideal gendered representations necessitate aug-

mented reality face filters, 3D body scanning and deep learning-based virtual try-on technologies, and object detection and categorization tools.

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Compliance with ethical standards
This article does not contain any studies with human participants or animals performed by the authors. Extracting and inspecting publicly accessible files (scholarly sources) as evidence, before the research began no institutional ethics approval was required.

Data availability statement
All data generated or analyzed are included in the published article.

Funding information
None.

Author contributions
All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication. The authors take full responsibility for the accuracy and the integrity of the data analysis.

Conflict of interest statement
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Transparency statement
The authors affirm that the manuscript represents an honest, accurate, and transparent account of the research being reported, that no relevant aspects of the study have been left out, and that any inconsistencies from the research as planned (and, if significant, registered) have been clarified.

Disclosure by the editors of record
The editors declare no conflict of interest in the review and publication decision regarding this article. This paper is part of a collective research topic, and thus a somewhat standard structure and a list of reliable data visualization and (reporting and methodological) quality assessment tools have been provided.

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Addleton Academic Publishers

Journal of Research in Gender Studies 15(1), 2025
pp. 41–48, ISSN 2164-0262, eISSN 2378-3524

3D Virtual Garment Simulation and Augmented Reality-based Body-enhancing Technologies, Neuromorphic Tactile Recognition and In-Sensor Motion Perception Systems, and 3D Facial Avatar Makeup Simulation and Digital Twin-based Detailed Body Shape Representation Tools for Idealized Beauty Images

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ABSTRACT. The purpose of this study is to examine 3D virtual garment simulation and augmented reality-based body-enhancing technologies, neuromorphic tactile recognition and in-sensor motion perception systems, and 3D facial avatar makeup simulation and digital twin-based detailed body shape representation tools for idealized beauty images. The analysis highlights that face and body emotion recognition processes necessitate digital beauty and computer-generated imagery technologies, motion-based gesture recognition and artificial tactile sensory systems, and 3D facial avatar makeup simulation and digital twin-based detailed body shape representation tools. Data extraction and reporting tools, reference management software, and machine learning classifiers harnessed include BIBOT, CASP, DistillerSR, Eppi-Reviewer, JBI SUMARI, and SluRp. The case studies cover YouCam Perfect app, Sendbird, Banuba's Face Filters SDK beautification tool, CyberLink's YouCam 365, Leopard V7 Beauty Camera & Sweet Camera,YouCam Makeup artificial intelligence face editing app, and Meitu artificial intelligence face-reshaping and beautification tool.

Keywords: 3D virtual garment; augmented reality-based body-enhancing; in-sensor motion perception; 3D facial avatar makeup; digital twin-based detailed body shape representation; idealized beauty image

How to cite: Szydło, J., Bonciu, C. I., Burcea, Ş. G., and Dumitrescu, C.-O. (2025). "3D Virtual Garment Simulation and Augmented Reality-based Body-enhancing Technologies, Neuromorphic Tactile Recognition and In-Sensor Motion Perception Systems, and 3D Facial Avatar Makeup Simulation and Digital Twin-based Detailed Body Shape Representation Tools for Idealized Beauty Images," *Journal of Research in Gender Studies* 15(1): 41–48. doi: 10.22381/JRGS15120254.

Received 11 February 2025 • Received in revised form 20 July 2025
Accepted 23 July 2025 • Available online 25 July 2025

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1. Introduction

Augmented reality try-on and virtual makeover apps, 3D virtual garment simulation and augmented reality-based body-enhancing technologies, and body image worry recognition and augmented reality filter-based self-face perception tools can optimize toxic body image ideals in relation to digital flawless beauty. Avatar makeup wearables, deep learning-based multimodal emotion recognition and 3D body sensory technologies, and artificial intelligence-enabled emotion communication and convolutional neural network-based gesture recognition systems are pivotal in toxic body image ideal and immersive augmented reality visualization.

2. Evidence Map Visualization, Study Screening, and Data Extraction and Reporting Tools Leveraged for Qualitative and Quantitative Data, Collection, Management, and Analysis in Research Synthesis

Data extraction and reporting tools, reference management software, and machine learning classifiers harnessed include Abstrackr (for collaborative citation screening semi-automation), AMSTAR (for literature search reliability), BIBOT (for machine learning-based article retrieval), CADIMA (for study selection and characteristic extraction), CASP (for thematic synthesized evidence quality appraisal), Catchii (for eligible title and abstract identification), Citationchaser (for inconsistent terminology networks), R package and Shiny app citationchaser (for research article explicit mentioning), DistillerSR (for artificial intelligence workflow-based data output), Eppi-Reviewer (for machine learning-based data collection), JBI SUMARI (for bias identification associated with published result detection), Litstream (for machine learning-based study quality assessment), METAGEAR package for R (for article retrieval automation), MMAT (for research quality evaluation), PICO Portal (for full-text de-duplication and screening), Rayyan (for evidence transparency and reproducibility), ROBIS (for methodological quality deficiency inspection), SluRp (for data classification and monitoring), SRDR+ (for research question data management), and Systematic Review Accelerator (for unnecessary term removal).

3. Literature Review

Deep learning 3D pose estimation and hyper-realistic augmented reality beauty technologies, synthetic speech augmentation devices, and wearable textile sensors (Ateq et al., 2024; Mihăilă, 2022; Popescu, 2023) can be deployed for physics-based 3D cloth behavior simulation, image-based 3D scene representation, and avatar motion capture and control. Augmented reality beautification filters, deep neural network-based photorealistic 3D

human visualization, and 3D human skeleton motion prediction and recognition (Beckett, 2022; Mirabet-Herranz et al., 2024; Watson, 2022) are instrumental in perceived facial attractiveness and digital human appearance. Digital twin-based detailed body size representation and 3D facial analysis tools, deep learning-based multimodal emotion recognition and body shape visualization technologies, and bio-inspired artificial perceptual and synthetic speech augmentation devices (Corpodean et al., 2022; Ota and Nakano, 2021) can be leveraged for human body movement reconstruction and body image dissatisfaction. Body image issues, negative emotional states, and face-specific visual self-representation (Cug et al., 2023; Padín et al., 2021; Qutub, 2021) require 3D body scanning and neuromorphic synthetic intelligence technologies for photoshopped and filtered images.

Artificial intelligence beauty and facial emotion recognition technologies, scene representation and classification tools, and augmented reality body and face filters (Elias and Gill, 2017; Mihăilă, 2023; Popescu, 2024) assist social comparison and appraisal processes (Gulati et al., 2024; Mișa et al., 2022; Schroeder and Behm-Morawitz, 2025) with regard to body dissatisfaction and shame, facial cue and expression detection, social values and behaviors, and touch and haptic imagery. 3D virtual try-on and artificial tactile sensing technologies, 3D facial avatar makeup simulation and digital twin-based detailed body shape representation tools, and synthetic geospatial data (Lăzăroiu et al., 2024; Perkins, 2022; Wang, 2024) assist harmful self-objectification processes and visual body processing mechanisms (Maes and de Lenne, 2022; Popescu, 2022; Zvarikova et al., 2023) for social values and identities, perceived socio-cultural pressures, and low self-esteem and body satisfaction.

4. Case Studies

YouCam Perfect app edits body features for a natural look, slimming waist, arms, and legs (that can be also lengthened in pictures), and includes auto waist detection. Sendbird optimizes on-screen appearance and color filters for mood-setting and a polished appearance, Banuba's Face Filters SDK beautification tool provides facial makeup and animation and voice and hair color changing, CyberLink's YouCam 365 enables real-time makeup application and enhances visual engagement, and Leopard V7 Beauty Camera & Sweet Camera reshapes face, smooths skin, and removes blemishes. YouCam Makeup artificial intelligence face editing app slims down face, adds virtual makeup and voluminous eyelashes, remove blemishes and wrinkles, edit cheekbones and jawline, and remove blemishes and uneven skin tone. YouCam Makeup face reshape and editing tools refine and reshape facial features, retouch and beautify skin, enlarge and brighten eyes, adjust and enhance nose size, shape, and position, and edit forehead, chin

width and length, cheeks and cheekbones. YouCam Makeup Face Editing App for a flawless natural-looking skin adjust face shape and lip size, edit eye and nose shape, and remove double chin. Meitu artificial intelligence face-reshaping and beautification tools slim face, smooth skin, adjust chin shape, whiten teeth, sharpen jawline, remove wrinkles, and edit forehead and hairstyle. YouCam Video artificial intelligence-powered skin smoothing apps correct hair color, brighten skin, conceal blemishes, remove acne and wrinkles, and plump lips.

5. Results

Beauty filters and augmented reality try-on technologies enhance visual appeal for a polished on-screen flawless appearance, refining facial features (e.g., jawline definition) and skin tone without consistent and appealing manual makeup application, thus optimizing confidence. Beauty filters and augmented reality try-on technologies apply makeup effects for realistic on-screen consistent appearance and a polished image, optimizing skin tone and eye size, removing skin spots and acne, and improving facial features. AI portrait retouch and face editing tools remove dark circles and redness, slim down, reshape, and refine face, slim body, adjust face width and cheekbones, and sharpen jawline.

Beauty filters and augmented reality try-on technologies smooth skin textures and jawlines, apply virtual makeup effects, edit face and head size, jawline, and head width and length, adjust and refine facial features (e.g., cheekbone structure), and reduce blemishes, for natural face slimming, maintaining a natural appearance. Artificial intelligence retouching tools and face editing apps smooth skin, edit chin shape, add virtual makeup by lipstick, blush, and eyeshadow try-ons, and reshape and slim face, enhancing appearance and natural proportions. Artificial intelligence-powered beauty filters and face editing tools are used for trendy makeup looks and retouching effects, impacting unrealistic beauty standards.

6. Discussion

3D augmented reality try-on and multi-sensory perception technologies, deep learning and machine-based eye-tracking algorithms, and neuromorphic tactile recognition and in-sensor motion perception systems can be harnessed for toxic body image ideals, affective computing and sentiment analysis, and digitally-mediated social presence. Our findings are also supported by Ateq et al. (2024), Cug et al. (2023), Mihăilă (2022), Padín et al. (2021), Popescu (2023), and Qutub (2021). Face and body emotion recognition processes necessitate digital beauty and computer-generated imagery technologies, motion-based gesture recognition and artificial tactile sensory systems, and

3D facial avatar makeup simulation and digital twin-based detailed body shape representation tools. This result is consistent with previous studies, such as Beckett (2022), Gulati et al. (2024), Mirabet-Herranz et al. (2024), Mișa et al. (2022), Schroeder and Behm-Morawitz (2025), and Watson (2022).

Idealized beauty representations and images, visual body processing mechanisms, and harmful self-objectification processes develop on 3D digital garment photorealistic simulations, aesthetic self-monitoring and wearable artificial intelligence devices, and convolutional neural network-based gesture recognition systems. This study aligns with Corpodean et al. (2022), Lăzăroiu et al. (2024), Ota and Nakano (2021), Perkins (2022), and Wang (2024). Real-time high accuracy voice analytics capabilities, problematic body image, and scene representation and classification integrate computer vision and body data-based generative artificial intelligence technologies, deep learning-based facial expression recognition systems, and 3D body tracking sensors. Our findings are consistent with Elias and Gill (2017), Maes and de Lenne (2022), Mihăilă (2023), Popescu (2022; 2024), and Zvarikova et al. (2023).

7. Conclusions

Virtual makeup try-on filters and beauty apps optimize eyebrow shape and lip color, smooth skin, fix smile imperfections, and whiten teeth for a glamorous vibe. Makeup virtual try-on technologies and beauty filters shape eyebrow, add ultra-long lashes, enhance facial features, remove blemishes, whiten teeth, and even skin tone. Real-time AI beauty filters and face retouch tools for a flawless virtual makeover optimize skin tone and eye size, eyeshadow intensity, and lip and hair color.

Neuromorphic synthetic intelligence and clothing simulation technologies, cognitive and affective algorithms, and deep learning-based gesture recognition and real-time location tracking systems are pivotal in perceived social validation, visual body processing mechanisms, and artificial intelligence-based speech synthesis and voice cloning. Artificial intelligence-powered mood detectors, visual and haptic object recognition tools, and deep learning and machine-based eye-tracking algorithms are instrumental in digitally mediated social presence with regard to social values and beliefs, negative emotional states, and body image disturbance.

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Compliance with ethical standards
This article does not contain any studies with human participants or animals performed by the authors. Extracting and inspecting publicly accessible files (scholarly sources) as evidence, before the research began no institutional ethics approval was required.

Data availability statement
All data generated or analyzed are included in the published article.

Funding information
None.

Author contributions
All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication. The authors take full responsibility for the accuracy and the integrity of the data analysis.

Conflict of interest statement
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Transparency statement
The authors affirm that the manuscript represents an honest, accurate, and transparent account of the research being reported, that no relevant aspects of the study have been left out, and that any inconsistencies from the research as planned (and, if significant, registered) have been clarified.

Disclosure by the editors of record
The editors declare no conflict of interest in the review and publication decision regarding this article. This paper is part of a collective research topic, and thus a somewhat standard structure and a list of reliable data visualization and (reporting and methodological) quality assessment tools have been provided.

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Addleton Academic Publishers

Journal of Research in Gender Studies 15(1), 2025
pp. 49–56, ISSN 2164-0262, eISSN 2378-3524

Beauty Filter-based Appealing Self-Presentation and 3D Facial Avatar Makeup Simulation Tools, Emotion Recognition and Visual Sentiment Algorithms, and 3D Human Body and Image Appearance Modeling for Augmented Reality-based Virtual Try-on and Hyper-Personalized Beauty Experiences

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ABSTRACT. This paper draws on a substantial body of theoretical and empirical research on beauty filter-based appealing self-presentation and 3D facial avatar makeup simulation tools, emotion recognition and visual sentiment algorithms, and 3D human body and image appearance modeling for augmented reality-based virtual try-on and hyper-personalized beauty experiences. In this research, prior findings were cumulated indicating that 3D augmented reality try-on and biometric emotional artificial intelligence technologies enable physical condition detection and monitoring, beauty filter-based appealing self-presentation, idealized beauty representations and images, perceived facial attractiveness, and social media-related body dissatisfaction. Study screening tools, reference management software, and machine learning classifiers leveraged include CADIMA, JBI SUMARI, Litstream, METAGEAR package for R, Nested Knowledge, and SWIFT-Active Screener. The case studies cover Everlook, Wondershare Filmora, AlterCam, Sandpiper Studio Beauty & Filter Camera, PhotoDirector artificial intelligence beauty and face filter app, FaceApp, FixThePhoto, YouCam Perfect face editing tools, BeautyPlus, and Facetune.

Keywords: beauty filter-based appealing self-presentation; 3D facial avatar makeup; 3D human body; image appearance; augmented reality-based virtual try-on; hyper-personalized beauty experience

How to cite: Pârvu, I. A., Privitera, D., Bîgu, A.-M., Pîrcălăbescu, R. M., and Pațurcă, R. N. (2025). "Beauty Filter-based Appealing Self-Presentation and 3D Facial Avatar Makeup Simulation Tools, Emotion Recognition and Visual Sentiment Algorithms, and 3D Human Body and Image Appearance Modeling for Augmented Reality-based Virtual Try-on and Hyper-Personalized Beauty Experiences," *Journal of Research in Gender Studies* 15(1): 49–56. doi: 10.22381/JRGS15120255.

Received 12 February 2025 • Received in revised form 14 July 2025
Accepted 17 July 2025 • Available online 24 July 2025

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1. Introduction

Visual sentiment and beauty filter algorithms, deep learning-based multimodal emotion recognition and augmented reality-based body-enhancing technologies, and convolutional neural network-based gesture recognition systems configure spatial imagery processes with regard to beauty ideal gendered representations. Immersive makeup and augmented reality-based virtual try-on experiences can be attained through artificial intelligence-powered mood detectors, digital twin-based detailed body size representation, image scene classification and processing, and 3D human body and image appearance modeling.

2. Study Screening, Data Extraction and Reporting, and Evidence Map Visualization Tools Employed for Qualitative and Quantitative Data, Collection, Management, and Analysis in Research Synthesis

Study screening tools, reference management software, and machine learning classifiers leveraged include Abstrackr (for methodologically rigorous evidence synthesis), AMSTAR (for literature search adequacy), BIBOT (for machine learning-based article analysis), CADIMA (for evidence synthesis), Catchii (for duplicate record detection and removal), Citationchaser (for semantically disconnected related topics), Colandr (for machine learning-based text-based evidence synthesis), R package and Shiny app citationchaser (for complex search string-based bibliographic database searching), DistillerSR (for artificial intelligence workflow-based data screening), EppiReviewer (for machine learning-based data clustering), JBI SUMARI (for bias identification associated with published result measurement), Litstream (for machine learning-based text screening), METAGEAR package for R (for text mining and critical analysis), Nested Knowledge (for data screening and extraction), PICO Portal (for citation screening and identification), Rayyan (for term tagging, selection, and screening), ROBIS (for study selection and appraisal), SluRp (for data tracking and analysis), SWIFT-Active Screener (for document classification and prioritization), and Systematic Review Accelerator (for search string duplicate exclusion).

3. Literature Review

Visual object appearance modeling, synthetic geospatial data, clothing texture simulation, virtual reality-based visual perception technologies, and bio-inspired artificial perceptual devices (Anani et al., 2024; Morley, 2022; Oregi et al., 2024; Popescu, 2023) configure harmful self-objectification processes and body image worry recognition (Frieiro et al., 2022; Luo and Zhang, 2024; Wang et al., 2019) for photorealistic animatable clothed

avatars (Barker, 2020; Lăzăroiu, 2024; Schroeder and Behm-Morawitz, 2025). Augmented reality-based virtual try-on and hyper-personalized beauty experiences (Bratu, 2022; Herring et al., 2024; Sonmez and Esiyok, 2022) can be attained through deep learning-based gesture recognition systems, virtual clothing try-on simulations, affective computing and sentiment analysis, and generative artificial intelligence virtual try-on tools (Chen et al., 2024; Michalkova et al., 2023; Newell, 2022).

Computer vision and semantic ontology technologies, deep-learning-based facial expression recognition and artificial sensory neural network systems, and bioinspired artificial perceptual devices (Cug et al., 2022; Millière, 2022; Riccio et al., 2024) further 3D facial expression and motion tracking. Beauty apps and filters, artificial intelligence-enabled emotion communication systems, and body data-based generative artificial intelligence technologies (Eugeni, 2024; Kandathil et al., 2020; Rowland, 2022) articulate unrealistic physical appearance, body shape and attractiveness (Hawker and Carah, 2020; Miller, 2024; Park and Hong, 2021), augmented reality filter-based self-face perception, and scene representation and classification (Foster and Baker, 2022; Mihăilă, 2024; Vochozka et al., 2022).

4. Case Studies

Everlook optimizes face and body features and smooths skin imperfections, reshaping and slimming body parts. Wondershare Filmora optimizes color correction and grading, AlterCam enables real-time voice modulation, and Sandpiper Studio Beauty & Filter Camera provides real-time face animation. PhotoDirector AI beauty and face filter app is used for natural realistic beauty enhancement, a full virtual makeover, and subtle refinements, FaceApp plumps lips, adds cosmetics effects, and slims face for a beautified look, FixThePhoto removes skin blemishes, adjusts facial features, smooths skin, whitens teeth, corrects stray hair, and enhances makeup, and YouCam Perfect face editing tools reshape face and tune body. YouCam Makeup face editing app makes subtle adjustments, retouching skin, reshaping nose, slimming face, changing skin texture, and editing lip shape. Hyper-realistic YouCam Makeup face-shaping and skin-retouching tools add makeup effects, modify hair color, fine-tune eyebrows, and adjust nose shape and jawline for a natural look. BeautyPlus realistic retouch and makeup tools smooth skin, remove blemishes, and optimize lip colors and eye shadow and also nose and face shaping for a personalized makeup look. Facetune beauty filters and subtle reshaping tools slim face, apply makeup styles, change hair color, remove acne, and spot pimples and blemishes. YouCam Video virtual makeup and retouch tools clear up skin imperfections, remove tackles acne, pimples and blemishes, and erase spots for a flawless look.

5. Results

Artificial neural network-based neuromorphic computing and motion-based gesture recognition systems, augmented reality try-on apps, and 3D virtual try-on and speech emotion recognition technologies configure unrealistic beauty images, body image dissatisfaction, low self-esteem and self-image, and negative moods and emotions. 3D body tracking and environmental behavior monitoring sensors, avatar makeup wearables, and digital clothing try-on and virtual makeover apps articulate visual digital cultures in relation to fashionable body ideals, physical appearance and attractiveness, body image concerns, and unrealistic societal beauty standards.

Virtual reality-based visual perception and body shape visualization technologies, augmented reality body and face filters, and sensor-based gesture recognition and visual motion perception systems can be deployed in relation to perceived body shape and ideal beauty standards. Hyper-personalized beauty and immersive makeup experiences can be achieved by use of synthetic geospatial and neuromorphic vision sensor data, 3D human skeleton motion prediction and recognition, and deep neural network-based photo-realistic 3D human reconstruction.

6. Discussion

Emotion recognition and visual sentiment algorithms, beauty filter-based appealing self-presentation and 3D facial avatar makeup simulation tools, and augmented reality try-on apps assist lifestyle behavior and marginalized body representation modeling. This result is consistent with previous studies, such as Anani et al. (2024), Cug et al. (2022), Millière (2022), Morley (2022), Oregi et al. (2024), Popescu (2023), and Riccio et al. (2024). 3D augmented reality try-on and biometric emotional artificial intelligence technologies enable physical condition detection and monitoring, beauty filter-based appealing self-presentation, idealized beauty representations and images, perceived facial attractiveness, and social media-related body dissatisfaction. This study aligns with Barker (2020), Foster and Baker (2022), Lăzăroiu (2024), Mihăilă (2024), Schroeder and Behm-Morawitz (2025), and Vochozka et al. (2022).

Avatar makeup wearables, artificial intelligence-powered mood detectors, augmented reality try-on lenses, and 3D body tracking sensors articulate social values and behaviors with regard to negative emotional states, body image disturbance, and unrealistic beauty images. Our findings are consistent with Bratu (2022), Frieiro et al. (2022), Herring et al. (2024), Luo and Zhang (2024), Sonmez and Esiyok (2022), and Wang et al. (2019). Hyper-personalized beauty and augmented reality-based virtual try-on experiences can be achieved by use of realistic makeup simulation and generative arti-

ficial intelligence virtual try-on tools, visual sentiment and image processing algorithms, 3D virtual try-on and body data-based generative artificial intelligence technologies, and synthetic geospatial and neuromorphic vision sensor data. Our findings are also supported by Chen et al. (2024), Eugeni (2024), Hawker and Carah (2020), Kandathil et al. (2020), Michalkova et al. (2023), Miller (2024), Newell (2022), Park and Hong (2021), and Rowland (2022).

7. Conclusions

Augmented reality-based virtual try-on and immersive makeup experiences can be attained through emotion recognition and visual cognitive algorithms, 3D human motion capture and facial emotion recognition technologies, beauty apps and filters, and convolutional neural network-based gesture recognition and artificial tactile sensory systems. Augmented reality body and face filters, 3D digital garment photorealistic simulations, and artificial intelligence beauty and speech emotion recognition technologies assist digitally mediated social presence in terms of body image perception and concerns, facial cues and expressions, perceived socio-cultural pressures, and unfavorable appearance comparisons. Virtual beauty and makeup try-ons, 3D-rendered digital outfit, object detection and categorization tools, and augmented reality-based body-enhancing and 3D body scanning technologies shape visual imagery and representations in terms of idealized facial and bodily appearances, body dissatisfaction and shame, body image self-consciousness, and touch and haptic imagery.

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Compliance with ethical standards
This article does not contain any studies with human participants or animals performed by the authors. Extracting and inspecting publicly accessible files (scholarly sources) as evidence, before the research began no institutional ethics approval was required.

Data availability statement
All data generated or analyzed are included in the published article.

Funding information
None.

Author contributions
All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication. The authors take full responsibility for the accuracy and the integrity of the data analysis.

Conflict of interest statement
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Transparency statement
The authors affirm that the manuscript represents an honest, accurate, and transparent account of the research being reported, that no relevant aspects of the study have been left out, and that any inconsistencies from the research as planned (and, if significant, registered) have been clarified.

Disclosure by the editors of record
The editors declare no conflict of interest in the review and publication decision regarding this article. This paper is part of a collective research topic, and thus a somewhat standard structure and a list of reliable data visualization and (reporting and methodological) quality assessment tools have been provided.

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Journal of Research in Gender Studies 15(1), 2025
pp. 57–64, ISSN 2164-0262, eISSN 2378-3524

Convolutional Neural Network-based Gesture Recognition and Virtual Try-on Clothing Systems, 3D Digital Garment Photorealistic Simulations, and Wearable Artificial Intelligence and Aesthetic Self-Monitoring Devices for Beauty Filter-based Appealing Self-Presentations and Social Appearance Comparisons

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ABSTRACT. Despite the relevance of convolutional neural network-based gesture recognition and virtual try-on clothing systems, 3D digital garment photorealistic simulations, and wearable artificial intelligence and aesthetic self-monitoring devices for beauty filter-based appealing self-presentations and social appearance comparisons, only limited research has been conducted on this topic. The findings and analyses highlight that 3D virtual modeling and multi-sensory perception technologies, synthetic speech augmentation and aesthetic self-monitoring devices, and visual sentiment and emotion recognition algorithms enable facial cue and expression detection and visual body processing mechanisms for social media-related body dissatisfaction, dysfunctional appearance beliefs, and negative moods and emotions. Machine learning-based study selection process and text mining systematic review management software and tools leveraged include CASP, R package and Shiny app citationchaser, Eppi-Reviewer, METAGEAR package for R, and PICO Portal. The case studies cover Perfect Me, GlamAR.io, PicsArt, Facetune, Peachy, Snapseed AI, AirBrush, YouCam, and PrettyUp.

Keywords: gesture recognition; virtual try-on clothing; 3D digital garment; aesthetic self-monitoring; beauty filter-based appealing self-presentation; social appearance

How to cite: Ciurlău, C. F., Emek, M. L., Dragomir, M., and Drugău Constantin, A.-L. (2025). "Convolutional Neural Network-based Gesture Recognition and Virtual Try-on Clothing Systems, 3D Digital Garment Photorealistic Simulations, and Wearable Artificial Intelligence and Aesthetic Self-Monitoring Devices for Beauty Filter-based Appealing Self-Presentations and Social Appearance Comparisons," *Journal of Research in Gender Studies* 15(1): 57–64. doi: 10.22381/JRGS15120256.

Received 18 February 2025 • Received in revised form 11 July 2025
Accepted 17 July 2025 • Available online 23 July 2025

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1. Introduction

Convolutional neural network-based gesture recognition and virtual try-on clothing systems, artificial intelligence-based speech synthesis and voice cloning tools, and computer-generated imagery and 3D virtual try-on technologies can configure beauty ideal gendered representations. Wearable artificial intelligence and aesthetic self-monitoring devices, augmented reality beauty apps and filters, and 3D body scanning and computer-generated imagery technologies shape body image disturbance.

3D body scanning technologies, affective computing algorithms, and multisensory object representation tools can be harnessed for digital human appearance, negative mood and self-esteem, perceived facial attractiveness, and deep learning network-based facial expression recognition. Immersive makeup and hyper-personalized beauty experiences can be attained through digital clothing try-on apps, augmented reality-based body-enhancing technologies, 3D digital garment photorealistic simulations, and physiological and behavior data interoperability.

2. Study Screening Tools, Machine Learning Classifiers, and Reference Management Software Employed

Machine learning-based study selection process and text mining systematic review management software and tools leveraged include Abstrackr (for machine-learning-based text mining), AMSTAR (for literature search validity), CADIMA (for study selection and appraisal), CASP (for qualitative evidence identification), Catchii (for automatic querying), Citationchaser (for relevant bibliographic record assessment), Colandr (for smart citation sorting), R package and Shiny app citationchaser (for backward and forward citation mining), DistillerSR (for artificial intelligence workflow-based data management), Eppi-Reviewer (for machine learning-based data analysis), JBI SUMARI (for study quality assessment), Litstream (for machine learning-based topic extraction), METAGEAR package for R (for research result identification), Nested Knowledge (for result visualization and analysis), PICO Portal (for artificial intelligence-based evidence mapping), Rayyan (for transparent and reproducible evidence), SluRp (for data aggregation and mining), SRDR+ (for text analysis data extraction), SWIFT-Active Screener (for full text, title, and abstract screening), and Systematic Review Accelerator (for abstract screening disagreement detection).

3. Literature Review

Cognitive and affective engagement, beauty filter-based appealing self-presentation, and social appearance comparisons (Ateq et al., 2024; Maes

and de Lenne, 2022; Popescu, 2022) develop on artificial neural network-based neuromorphic computing and motion-based gesture recognition systems, semantic object recognition and spatial mapping algorithms, and 3D virtual try-on and image-based 3D reconstruction technologies (Cîrstea, 2024; Mirabet-Herranz et al., 2024; Qutub, 2021). Augmented reality beautification filters, bio-inspired artificial perceptual devices, biometric emotional artificial intelligence technologies, and deep learning-based gesture recognition systems (Beckett, 2022; Mihăilă and Braniște, 2021; Rice, 2022) optimize marginalized body representations and face-specific visual self-representation (Cug et al., 2023; Li and Sun, 2024; Peng, 2020).

Augmented reality body and face filters, artificial tactile sensory systems, and 3D garment simulation and facial expression recognition technologies (Bratu, 2024; Janak et al., 2024; Oláh et al., 2023) shape 3D scene decomposition and segmentation for artificial intelligence-generated hyper-realistic body-inclusive avatars (Digennaro and Tescione, 2024; Morikawa et al., 2021; Wang, 2024). Space mapping and dynamic gesture recognition algorithms, hyper-realistic augmented reality beauty and biometric emotional artificial intelligence technologies, and deep learning-based facial expression recognition and real-time location tracking systems (Carey, 2022; Mihăilă, 2022; Padín et al., 2021) can be deployed for 3D motion data and silhouette image analysis (Eldaly and Mashaly, 2022; Mulgrew and Courtney, 2022).

4. Case Studies

Perfect Me reshapes body and eyebrows, nudges smile, adjusts height and facial features, plumps lips, slims down waist, and adds skin decorations. GlamAR.io beauty filters' augmented reality try-on capabilities apply high-definition flawless makeup effects, enhance visual appeal, and refine facial contours. PicsArt face retouch filters and face shape-changing tools smooth skin, adjust forehead and head size, and optimize chin length, Facetune is used for quick retouching, covers blemishes and applies makeup, Peachy face-shaping tools reshape nose and mouth, adjust brows, and beautify skin, Snapseed AI face editor enhances facial features and smooths skin, and AirBrush reshapes face, smooths skin, and whitens teeth. FaceTune AI Face Editor and virtual makeup tools adjust eyes, nose, and lips, brighten teeth, smooth skin, enhance facial expression, edit smile, and reshape jawline. YouCam Video virtual makeup and retouch tools remove nasolabial folds, blemishes, pimples, scars, and acne for natural look, face smoothing, flawless texture, and effective skin enhancement. PrettyUp smooths out skin, remove spots and nasolabial folds, eliminates wrinkles and blemishes, and simulate hair color change, ensuring a polished appearance. Facetune high-quality retouching and photo editing tools add makeup styles for a flawless

skin, change hairstyle color, contour face, simulate hair color change, and remove forehead wrinkles.

5. Results

3D virtual modeling and multi-sensory perception technologies, synthetic speech augmentation and aesthetic self-monitoring devices, and visual sentiment and emotion recognition algorithms enable facial cue and expression detection and visual body processing mechanisms for social media-related body dissatisfaction, dysfunctional appearance beliefs, and negative moods and emotions. Biometric emotional artificial intelligence and augmented reality-based body-enhancing technologies, augmented reality face filters, and deep learning-based gesture recognition and real-time location tracking systems further synthetic geospatial and neuromorphic vision sensor data with reference to body image dissatisfaction, idealized appearance and imagery, and self-rated emotional expressiveness. Augmented reality-based virtual try-on and hyper-personalized beauty experiences can be attained by use of artificial tactile sensory and motion-based gesture recognition systems, 3D object recognition and path planning tools, and deep learning-based virtual try-on and facial expression recognition technologies.

6. Discussion

Augmented reality-based virtual try-on and hyperrealistic immersive experiences can be achieved by use of realistic facial image reconstruction, complex immersive spatial simulation, bio-inspired artificial perceptual devices, and deep learning-based skeletal motion prediction. Personalized visual appeal, facial cues and expressions, and idealized beauty representations and images integrate 3D spatial object modeling, semantic scene understanding, and motion capture animation in visually-consistent photo-realistic virtual environments. This study aligns with Ateq et al. (2024), Cîrstea (2024), Maes and de Lenne (2022), Mirabet-Herranz et al. (2024), Popescu (2022), and Qutub (2021). Deep learning-based virtual try-on and tactile sensory neuromorphic computing technologies can be leveraged for idealized beauty representations and images, digital twin-based detailed body size representation, fashionable body ideals, perceived facial attractiveness, facial cues and expressions, and digitally mediated social presence. This result is consistent with previous studies, such as Bratu (2024), Cug et al. (2023), Janak et al. (2024), Li and Sun (2024), Oláh et al. (2023), and Peng (2020).

Artificial tactile sensing and computer-generated imagery technologies, 3D body tracking sensors, and visual sentiment and cognitive mapping algorithms enhance body-image affective judgments and unrealistic societal

beauty standards for artificial intelligence-generated hyper-realistic body-inclusive avatars. Our findings are consistent with Beckett (2022), Digennaro and Tescione (2024), Mihăilă and Braniște (2021), Morikawa et al. (2021), Rice (2022), and Wang (2024). Augmented reality face filters, realistic makeup simulation and beauty ideal internalization tools, and aesthetic and affective technologies enhance digital twin-based detailed body size representation and digital social practices with regard to unrealistic physical appearance, body shape perceptions, and appearance management behaviors. Photo retouching apps, 3D body tracking sensors, and beauty artificial intelligence and 3D digital clothing technologies can be harnessed for visually appealing self-presentations, social appearance comparisons, and expressive gestures and movements. Our findings are also supported by Carey (2022), Eldaly and Mashaly (2022), Mihăilă (2022), Mulgrew and Courtney (2022), and Padín et al. (2021).

7. Conclusions

Makeup features and beautifying tools smooth skin, remove blemishes and acne, and brighten face for a subtle touch-up and naturally flawless appearance. Artificial intelligence-powered retouching apps fine-tune skin texture smoothing, conceal face acne and blemishes, remove forehead and under-eye wrinkles, simulate a realistic hairstyle, and correct tone by virtual makeup application. Realistic makeup tools and beauty filters detect and retouch skin imperfections, remove wrinkles and blemishes, and enhance facial features. Artificial neural network-based neuromorphic computing and motion-based gesture recognition systems, deep learning and machine-based eye-tracking algorithms, and augmented reality try-on and virtual makeover apps configure visual digital cultures for fashionable body ideals in relation to physical appearance and attractiveness, negative moods and emotions, and objectified body consciousness.

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Compliance with ethical standards
This article does not contain any studies with human participants or animals performed by the authors. Extracting and inspecting publicly accessible files (scholarly sources) as evidence, before the research began no institutional ethics approval was required.

Data availability statement
All data generated or analyzed are included in the published article.

Funding information
None.

Author contributions
All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication. The authors take full responsibility for the accuracy and the integrity of the data analysis.

Conflict of interest statement
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Disclosure by the editors of record
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