

REFERENCES

- [1] “Skin Care Products Market Size Report, 2022-2030.” <https://www.grandviewresearch.com/industry-analysis/skin-care-products-market> (accessed Jul. 21, 2022).
- [2] “Global Facial Care Market Size & Share | Industry Report, 2019-2025.” <https://www.grandviewresearch.com/industry-analysis/facial-care-market> (accessed Jul. 19, 2022).
- [3] Y. Lee, J. Choi, and S. Shin, “A Study on the Direction of Evaluation Indicators for Personalized Beauty Self-care,” *J. Fash. Bus.*, vol. 24, no. 6, pp. 120–134, 2020, doi: 10.12940/jfb.2020.24.6.120.
- [4] A. Alagić *et al.*, “Application of artificial intelligence in the analysis of the facial skin health condition,” *IFAC-Pap.*, vol. 55, no. 4, pp. 31–37, Jan. 2022, doi: 10.1016/j.ifacol.2022.06.005.
- [5] C. Karimkhani *et al.*, “Global Skin Disease Morbidity and Mortality,” *JAMA Dermatol.*, vol. 153, no. 5, pp. 406–412, May 2017, doi: 10.1001/jamadermatol.2016.5538.
- [6] Reportlinker, “Global Acne Market Report for 2016-2026.” <https://www.prnewswire.com/news-releases/global-acne-market-report-for-2016-2026-300576931.html> (accessed Jul. 23, 2022).
- [7] K. Rodan, K. Fields, G. Majewski, and T. Falla, “Skincare Bootcamp: The Evolving Role of Skincare,” *Plast. Reconstr. Surg. Glob. Open*, vol. 4, no. 12 Suppl, p. e1152, Dec. 2016, doi: 10.1097/GOX.0000000000001152.
- [8] A. Quattrini, C. Boër, T. Leidi, and R. Paydar, “A Deep Learning-Based Facial Acne Classification System,” *Clin. Cosmet. Investig. Dermatol.*, vol. 15, pp. 851–857, May 2022, doi: 10.2147/CCID.S360450.
- [9] H.-T. Chan, T.-Y. Lin, S.-C. Deng, C.-H. Hsia, and C.-F. Lai, “Smart Facial Skincare Products Using Computer Vision Technologies,” in *2021 Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC)*, Dec. 2021, pp. 1674–1677.
- [10] P. Nopparatkiat, B. na Nagara, and C. Chansa-ngavej, “Expert System for Skin Problem Consultation in Thai Traditional Medicine,” *Afr. J. Tradit. Complement. Altern. Med.*, vol. 11, no. 1, pp. 103–108, Nov. 2013.
- [11] “SkinSmart: A Recommendation System for Skincare Products,” *Data Science Blog*. <https://nycdatascience.com/blog/student-works/skinsmart-recommendation-system-skincare-products/> (accessed Jul. 30, 2022).
- [12] M. S. Junayed *et al.*, *AcneNet - A Deep CNN Based Classification Approach for Acne Classes*. 2019, p. 208. doi: 10.1109/ICTS.2019.8850935.

- [13] T.-Y. Lin, H.-T. Chan, C.-H. Hsia, and C.-F. Lai, "Facial Skincare Products' Recommendation with Computer Vision Technologies," *Electronics*, vol. 11, no. 1, Art. no. 1, Jan. 2022, doi: 10.3390/electronics11010143.
- [14] C. P. C. Munaiseche, J. P. Amel, V. P. Rantung, G. C. Rorimpandey, F. I. Sangkop, and P. T. D. Rompas, "Expert System Implementation for the Diagnosis of Skin Diseases using Forward Chaining Method:," in *Proceedings of the 7th Engineering International Conference on Education, Concept and Application on Green Technology*, Semarang, Indonesia: SCITEPRESS - Science and Technology Publications, 2018, pp. 287–291. doi: 10.5220/0009009902870291.
- [15] M. E. Ibrahim, Y. Yang, D. Ndzi, G. Yang, and M. Almaliki, "Ontology-based Personalised Course Recommendation Framework," p. 21.
- [16] R. Alaa, M. Gawich, and M. Fernandez-Veiga, *Personalized Recommendation for Online Retail Applications Based on Ontology Evolution*. 2020, p. 16. doi: 10.1145/3397125.3397134.
- [17] "Nutrition for Elder Care: a nutritional semantic recommender system for the elderly - Espín - 2016 - Expert Systems - Wiley Online Library." <https://onlinelibrary.wiley.com/doi/epdf/10.1111/exsy.12143> (accessed Jul. 29, 2022).
- [18] X. Wu *et al.*, "Joint Acne Image Grading and Counting via Label Distribution Learning," in *2019 IEEE/CVF International Conference on Computer Vision (ICCV)*, Seoul, Korea (South): IEEE, Oct. 2019, pp. 10641–10650. doi: 10.1109/ICCV.2019.01074.
- [19] "A Review of Skin and the Effects of Aging on Skin Structure and Function," *Wound Manag. Prev.*, vol. 52, no. 9, Sep. 2006, Accessed: Mar. 28, 2023. [Online]. Available: <https://www.hmpgloballearningnetwork.com/site/wmp/content/a-review-skin-and-effects-aging-skin-structure-and-function>
- [20] "Acne - Symptoms and causes," *Mayo Clinic*. <https://www.mayoclinic.org/diseases-conditions/acne/symptoms-causes/syc-20368047> (accessed Apr. 07, 2023).
- [21] "Acne: Causes, treatment, and tips," Nov. 27, 2017. <https://www.medicalnewstoday.com/articles/107146> (accessed Apr. 07, 2023).
- [22] L. Baumann and L. Baumann, *Cosmetic dermatology and medicine: principles and practice*, 2nd ed. New York: McGraw-Hill, 2009.
- [23] Z. D. Draelos, "Revisiting the Skin Health and Beauty Pyramid: A Clinically Based Guide to Selecting Topical Skincare Products," vol. 20, no. 6, 2021.
- [24] "Meaning of Exfoliating: What Is It, Why You Should, and How to Start," *Healthline*, Sep. 26, 2018. <https://www.healthline.com/health/beauty-skin-care/meaning-of-exfoliating> (accessed Apr. 09, 2023).

- [25] K.-H. Park and Y.-H. Kim, "Skin Condition Analysis of Facial Image using Smart Device: Based on Acne, Pigmentation, Flush and Blemish," *J. Adv. Inf. Technol. Converg.*, vol. 8, no. 2, pp. 47–58, Dec. 2018, doi: 10.14801/JAITC.2018.8.2.47.
- [26] H. Wen *et al.*, "Acne detection and severity evaluation with interpretable convolutional neural network models," *Technol. Health Care*, vol. 30, no. S1, pp. 143–153, Jan. 2022, doi: 10.3233/THC-228014.
- [27] P. Kanani, "Deep Learning to Detect Skin Cancer using Google Colab," *Int. J. Eng. Adv. Technol.*, vol. 8, pp. 2176–2183, Aug. 2019, doi: 10.35940/ijeat.F8587.088619.
- [28] M. Patricia, E. Santiago, and M. Javier, "Expert System for the Pre-diagnosis of Skin Diseases," *Int. J. Mach. Learn. Comput.*, vol. 10, pp. 81–86, Jan. 2020, doi: 10.18178/ijmlc.2020.10.1.902.
- [29] N. Abdullah and A. S. H. Basari, "The Development of a Skincare Routine Expert System," *Appl. Inf. Technol. Comput. Sci.*, vol. 3, no. 2, Art. no. 2, Nov. 2022.
- [30] D. S. Ramdan, C. A. Sugianto, and R. D. Monica, "Expert System of Facial Skin Type Diagnosis and Skincare Recommendation Based on Certainty Factor," *J. Appl. Intell. Syst.*, vol. 7, no. 3, Art. no. 3, Dec. 2022, doi: 10.33633/jais.v7i3.7150.
- [31] G. Lee, "A Content-based Skincare Product Recommendation System," p. 5, 2020.
- [32] V. Putriany, J. Jauhari, and R. Izwan Heroza, "Item Clustering as An Input for Skin Care Product Recommended System using Content Based Filtering," *J. Phys. Conf. Ser.*, vol. 1196, p. 012004, Mar. 2019, doi: 10.1088/1742-6596/1196/1/012004.
- [33] H. H. Moe and W. T. Aung, "Building Ontologies for Cross-domain Recommendation on Facial Skin Problem and Related Cosmetics," *Int. J. Inf. Technol. Comput. Sci.*, vol. 6, no. 6, pp. 33–39, May 2014, doi: 10.5815/ijitcs.2014.06.05.
- [34] "For Your Skin Beauty: Mapping Cosmetic Items with Bokeh | by Jiwon Jeong | Towards Data Science." <https://towardsdatascience.com/for-your-skin-beauty-mapping-cosmetic-items-with-bokeh-af7523ca68e5> (accessed Aug. 13, 2022).
- [35] H.-H. Li, Y.-H. Liao, Y.-N. Huang, and P.-J. Cheng, "Based on machine learning for personalized skin care products recommendation engine," in *2020 International Symposium on Computer, Consumer and Control (IS3C)*, Nov. 2020, pp. 460–462. doi: 10.1109/IS3C50286.2020.00125.
- [36] C.-H. Hsia, T.-Y. Lin, J.-L. Lin, H. Prasetyo, S.-L. Chen, and H.-W. Tseng, "System for Recommending Facial Skincare Products," *Sens. Mater.*, vol. 32, no. 10, p. 3235, Oct. 2020, doi: 10.18494/SAM.2020.2862.

- [37] C. Welty, “Ontology Research,” *AI Mag.*, vol. 24, no. 3, Art. no. 3, Sep. 2003, doi: 10.1609/aimag.v24i3.1714.
- [38] R. Stevens, C. A. Goble, and S. Bechhofer, “Ontology-based knowledge representation for bioinformatics,” *Brief. Bioinform.*, vol. 1, no. 4, pp. 398–414, Nov. 2000, doi: 10.1093/bib/1.4.398.
- [39] T. R. Gruber, “Toward principles for the design of ontologies used for knowledge sharing?,” *Int. J. Hum.-Comput. Stud.*, vol. 43, no. 5, pp. 907–928, Nov. 1995, doi: 10.1006/ijhc.1995.1081.
- [40] G. Antoniou and G. Antoniou, Eds., *A Semantic Web primer*, 3rd ed. in Cooperative information systems. Cambridge, Mass: MIT Press, 2012.
- [41] D. Rubin, N. Noy, and M. Musen, “Protégé: A Tool for Managing and Using Terminology in Radiology Applications,” *J. Digit. Imaging Off. J. Soc. Comput. Appl. Radiol.*, vol. 20 Suppl 1, pp. 34–46, Dec. 2007, doi: 10.1007/s10278-007-9065-0.
- [42] “protégé.” <https://protege.stanford.edu/> (accessed Aug. 13, 2022).
- [43] N. F. Noy and D. L. McGuinness, “Ontology Development 101: A Guide to Creating Your First Ontology,” p. 25.
- [44] “What are Convolutional Neural Networks? | IBM.” <https://www.ibm.com/topics/convolutional-neural-networks> (accessed Apr. 14, 2023).
- [45] R. Andreoni, “Building a Convolutional Neural Network from Scratch using Numpy,” *Medium*, Oct. 13, 2022. <https://towardsdatascience.com/building-a-convolutional-neural-network-from-scratch-using-numpy-a22808a00a40> (accessed Apr. 21, 2023).
- [46] T. A. Team, “Beginners Guide to Convolutional Neural Network from... – Towards AI.” <https://towardsai.net/p/machine-learning/beginner-guides-to-convolutional-neural-network-from-scratch-kuzushiji-mnist-75f42c175b21>, <https://towardsai.net/p/machine-learning/beginner-guides-to-convolutional-neural-network-from-scratch-kuzushiji-mnist-75f42c175b21> (accessed Apr. 21, 2023).
- [47] S. Balaji, “Binary Image classifier CNN using TensorFlow,” *Techiepedia*, Aug. 29, 2020. <https://medium.com/techiepedia/binary-image-classifier-cnn-using-tensorflow-a3f5d6746697> (accessed Apr. 22, 2023).
- [48] “Google Colab.” <https://research.google.com/colaboratory/faq.html> (accessed Apr. 14, 2023).
- [49] B. Ekanayake, “A DEEP LEARNING-BASED BUILDING DEFECTS DETECTION TOOL FOR SUSTAINABILITY MONITORING,” p. 12, 2022.
- [50] M. E. Ibrahim, “An Ontology-based Hybrid Approach to Course Recommendation in Higher Education”.

[51] P. Page, "Likert scale survey questions and examples," *The Jotform Blog*, Jan. 24, 2023. <https://www.jotform.com/blog/likert-scale-survey-example/> (accessed Apr. 05, 2023).