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Exploring the Use of Facial Attributes in Personality-Driven Recommendation Systems (FABaRS): A Survey

San Sequeira¹ and Dr. Amol Jogalekar²

S.V.K.M's Mithibai College of Arts, Chauhan Institute of Science and Amrutben Jivanlal College of Commerce and Economics (Autonomous), Mumbai, Maharashtra, India Affiliated to University of Mumbai, Vile Parle - West Mumbai, India. sqrasan@gmail.com¹ and Amol.jogalekar@mithibai.ac.in²

Abstract: Modern computing systems are designed to provide a personalised experience for the user. They use a variety of techniques, such as machine learning and data analytics, to tailor their interactions and results to the user's needs and preferences. This paper aims to provide an updated survey of the state of facial attribute-based personality-aware computing used specifically in recommender systems, with a focus on recent developments. The objective of this study is to outline the current themes and directions of research in the field of facial attribute-based personality-aware computing for recommenders and to provide insights into potential future developments in this area.

Keywords: Personality-aware systems, recommendation systems, facial attributes, social computing, big five, five-factor model.

REFERENCES

- [1]. Ekman, P., Freisen, W. V., & Ancoli, S. (1980). Facial signs of emotional experience. Journal of Personality and Social Psychology, 39(6), 1125–1134. https://doi.org/10.1037/h0077722
- [2]. Kachur, A., Osin, E., Davydov, D. et al. Assessing the Big Five personality traits using real-life static facial images. Sci Rep 10, 8487 (2020). https://doi.org/10.1038/s41598-020-65358-6
- [3]. Eva Hudlicka, Chapter 16 Computational Modeling of Cognition–Emotion Interactions: Theoretical and Practical Relevance for Behavioral Healthcare, Editor(s): Myounghoon Jeon, Emotions and Affect in Human Factors and Human-Computer Interaction, Academic Press, 2017, Pages 383-436, ISBN 9780128018514, https://doi.org/10.1016/B978-0-12-801851-4.00016-1
- [4]. Dhelim, S., Aung, N., Bouras, M. et al. A survey on personality-aware recommendation systems. Artif Intell Rev 55, 2409–2454 (2022). https://doi.org/10.1007/s10462-021-10063-7
- [5]. Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. G. (2006). The international personality item pool and the future of public-domain personality measures. Journal of Research in Personality, 40(1), 84-96. https://doi.org/10.1016/j.jrp.2005.08.007
- [6]. I. Arapakis, Y. Moshfeghi, H. Joho, R. Ren, D. Hannah and J. M. Jose, "Integrating facial expressions into user profiling for the improvement of a multimodal recommender system," 2009 IEEE International Conference on Multimedia and Expo, New York, NY, USA, 2009, pp. 1440-1443. https://doi.org/10.1109/ICME.2009.5202773
- [7]. C. Dalvi, M. Rathod, S. Patil, S. Gite and K. Kotecha, "A Survey of AI-Based Facial Emotion Recognition: Features, ML & DL Techniques, Age-Wise Datasets and Future Directions," in IEEE Access, vol. 9, pp. 165806-165840, 2021. https://doi.org/10.1109/ACCESS.2021.3131733
- [8]. Mehta, Y., Majumder, N., Gelbukh, A. et al. Recent trends in deep learning based personality detection. Artif Intell Rev 53, 2313–2339 (2020). https://doi.org/10.1007/s10462-019-09770-z
- [9]. Gucluturk Y, Guclu U, Perez M, Balderas HJE, Baro X, Guyon I, Andujar C, Junior J, Madadi M, Escalera S et al (2017) Visualizing apparent personality analysis with deep residual networks. In: International conference

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on computer vision-ICCV 2017

- [10]. OpenFace: https://github.com/TadasBaltrusaitis/OpenFace
- [11]. S. Chauhan, R. Mangrola and D. Viji, "Analysis of Intelligent movie recommender system from facial expression," 2021 5th International Conference on Computing Methodologies and Communication (ICCMC), Erode, India, 2021, pp. 1454-1461. https://doi.org/10.1109/ICCMC51019.2021.9418421
- [12]. Z. Liu, Y. Ji, Y. Hu, and T. Zhan, "Design and Implementation of Hair Recommendation System Based on Face Recognition," in Proceedings of the 2019 2nd International Conference on Mathematics, Modeling and Simulation Technologies and Applications (MMSTA 2019), 2019/12, pp. 180–183. https://doi.org/10.2991/mmsta-19.2019.38
- [13]. Kang, Wang-Cheng & Fang, Chen & Wang, Zhaowen & McAuley, Julian. (2017). Visually-Aware Fashion Recommendation and Design with Generative Image Models. https://doi.org/10.48550/arXiv.1711.02231
- [14]. H. Immanuel James 1, J. James Anto Arnold2, J. Maria Masilla Ruban3, M. Tamilarasan4,
- [15]. R. Saranya5 "Emotion based music recommendation system", International Research Journal of Engineering and Technology (IRJET), Vol 6, Issue 3, Mar 2019
- [16]. V. P. Sharma, A. S. Gaded, D. Chaudhary, S. Kumar and S. Sharma, "Emotion-Based Music Recommendation System," 2021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), Noida, India, 2021, pp. 1-5. https://doi.org/10.1109/ICRITO51393.2021.9596276
- [17]. M. B. Mariappan, M. Suk and B. Prabhakaran, "FaceFetch: A User Emotion Driven Multimedia Content Recommendation System Based on Facial Expression Recognition," 2012 IEEE International Symposium on Multimedia, Irvine, CA, USA, 2012, pp. 84-87. https://doi.org/10.1109/ism.2012.24
- [18]. M. Iqtait, F. S. Mohamad, and M. Mamat, "Feature extraction for face recognition via Active Shape Model (ASM) and Active Appearance Model (AAM)," IOP Conference Series: Materials Science and Engineering, vol. 332, no. 1, p. 012032, Mar. 2018. https://doi.org/10.1088/1757-899X/332/1/012032
- [19]. R. L. Rosa, G. M. Schwartz, W. V. Ruggiero and D. Z. Rodríguez, "A Knowledge-Based Recommendation System That Includes Sentiment Analysis and Deep Learning," in IEEE Transactions on Industrial Informatics, vol. 15, no. 4, pp. 2124-2135, April 2019 https://doi.org/10.1109/TII.2018.2867174
- [20]. A. K. Sharma and H. Foroosh, "Slim-CNN: A Light-Weight CNN for Face Attribute Prediction," 2020 15th IEEE International Conference on Automatic Face and Gesture Recognition (FG 2020), Buenos Aires, Argentina, 2020, pp. 329-335. https://doi.org/10.1109/FG47880.2020.00085
- [21]. Hsin-Chang Yang, Zi-Rui Huang. "Mining personality traits from social messages for game recommender systems". Knowledge-Based Systems 2019; 165:157-168. https://doi.org/10.1016/j.knosys.2018.11.025
- [22]. Mehdi Elahi, Reza Hosseini, Mohammad H. Rimaz, Farshad B. Moghaddam, and Christoph Trattner. 2020. Visually-Aware Video Recommendation in the Cold Start. In Proceedings of the 31st ACM Conference on Hypertext and Social Media (HT '20). Association for Computing Machinery, New York, NY, USA, 225–229. https://doi.org/10.1145/3372923.3404778
- [23]. R. A. Nugrahaeni and K. Mutijarsa, "Comparative analysis of machine learning KNN, SVM, and random forests algorithm for facial expression classification," 2016 International Seminar on Application for Technology of Information and Communication (ISemantic), Semarang, Indonesia, 2016, pp. 163-168. https://doi.org/10.1109/ISEMANTIC.2016.7873831
- [24]. R. L. Rosa, G. M. Schwartz, W. V. Ruggiero and D. Z. Rodríguez, "A Knowledge-Based Recommendation System That Includes Sentiment Analysis and Deep Learning," in IEEE Transactions on Industrial Informatics, vol. 15, no. 4, pp. 2124-2135, April 2019. https://doi.org/10.1109/TII.2018.2867174
- [25]. Bruce Ferwerda and Marko Tkalcic. 2018. Predicting Users' Personality from Instagram Pictures: Using Visual and/or Content Features? In Proceedings of the 26th Conference on User Modeling, Adaptation and Personalization (UMAP '18). Association for Computing Machinery, New York, NY, USA, 157–161. https://doi.org/10.1145/3209219.3209248
- [26]. Packer, Charles & McAuley, Julian & Ramisa, Arnau. (2018). Visually-Aware Personalized Recommendation using Interpretable Image Representations. https://doi.org/10.48550/arXiv.1806.09820

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- [27]. A collection of papers on the Multimodal Recommender system and datasets: https://github.com/enoche/MultimodalRecSys
- [28]. L. Pauly and D. Sankar, "A novel online product recommendation system based on face recognition and emotion detection," 2015 International Conference on Control, Instrumentation, Communication and Computational Technologies (ICCICCT), Kumaracoil, India, 2015, pp. 329-334. https://doi.org/10.1109/ICCICCT.2015.7475299
- [29]. H. Ning, S. Dhelim and N. Aung, "PersoNet: Friend Recommendation System Based on Big-Five Personality Traits and Hybrid Filtering," in IEEE Transactions on Computational Social Systems, vol. 6, no. 3, pp. 394-402, June 2019, https://doi.org/10.1109/TCSS.2019.2903857