

Biases evaluation for biometric system certification

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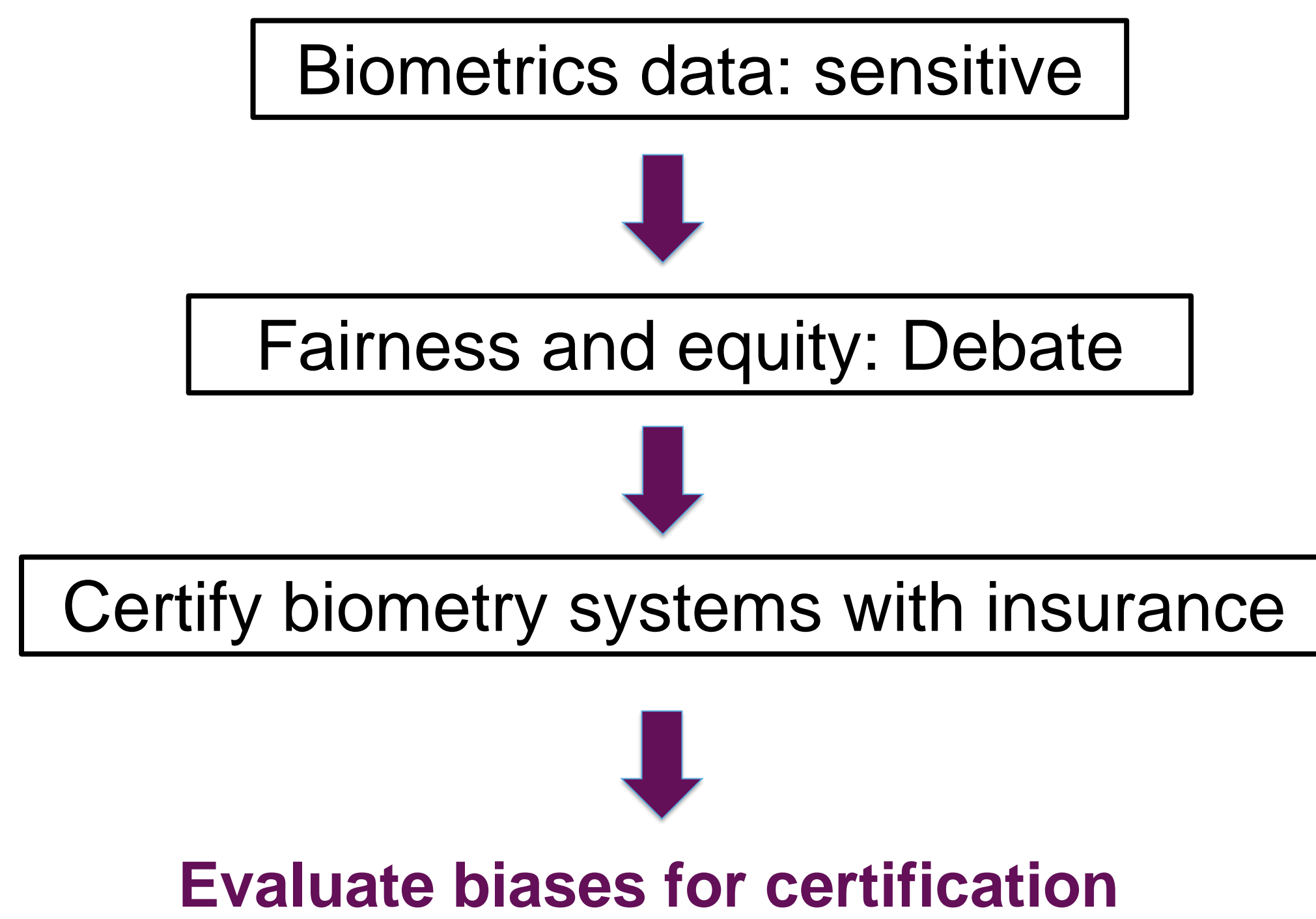
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1. Motivation

In the realm of technology, biometric data is highly sensitive, raising ongoing debates about fairness and equity in its utilization. Certifying biometric systems is imperative to guarantee compliance with these fairness and equity standards.



Thus, our work primarily revolves around evaluating biases in biometric systems as a part of the certification process.

2. Biases in biometric system

Definition

Biases in biometric systems refer to systematic deviations that can lead to unequal performance across different user groups.

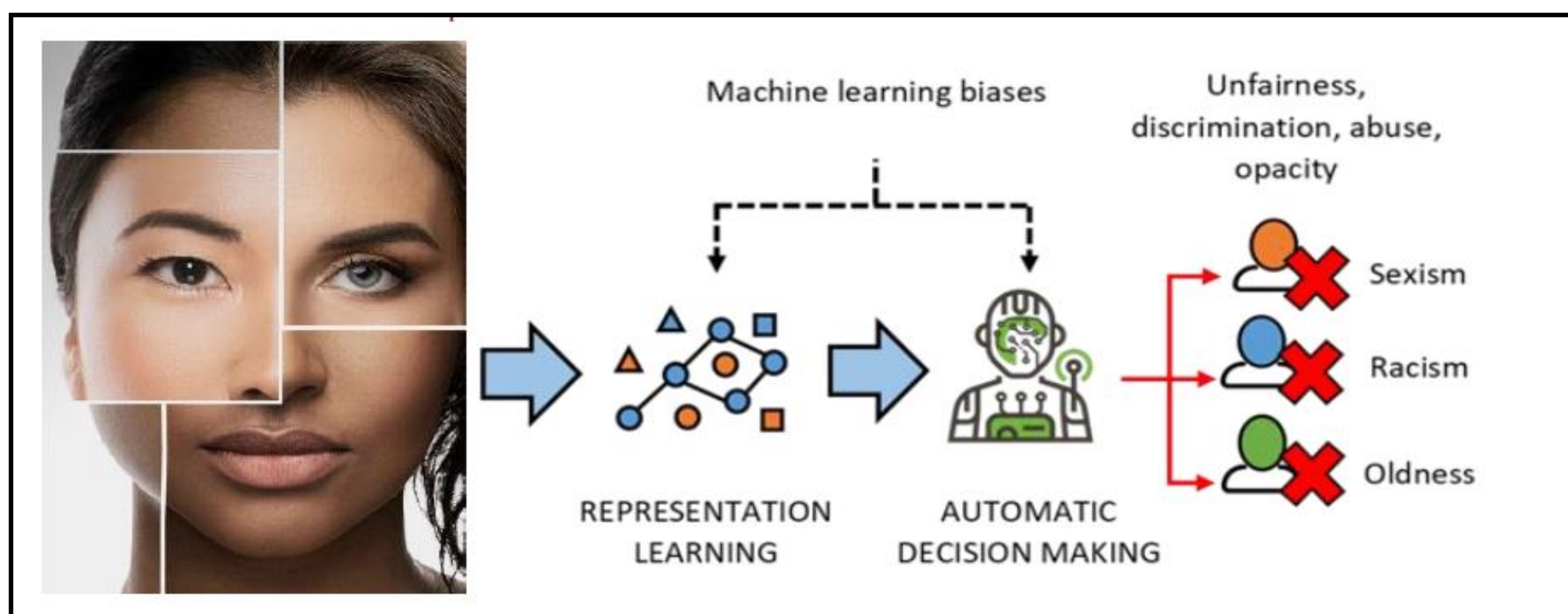


Figure 1: Biases illustration in facial recognition

Origins of biases

Biases can come everywhere in the biometric system.

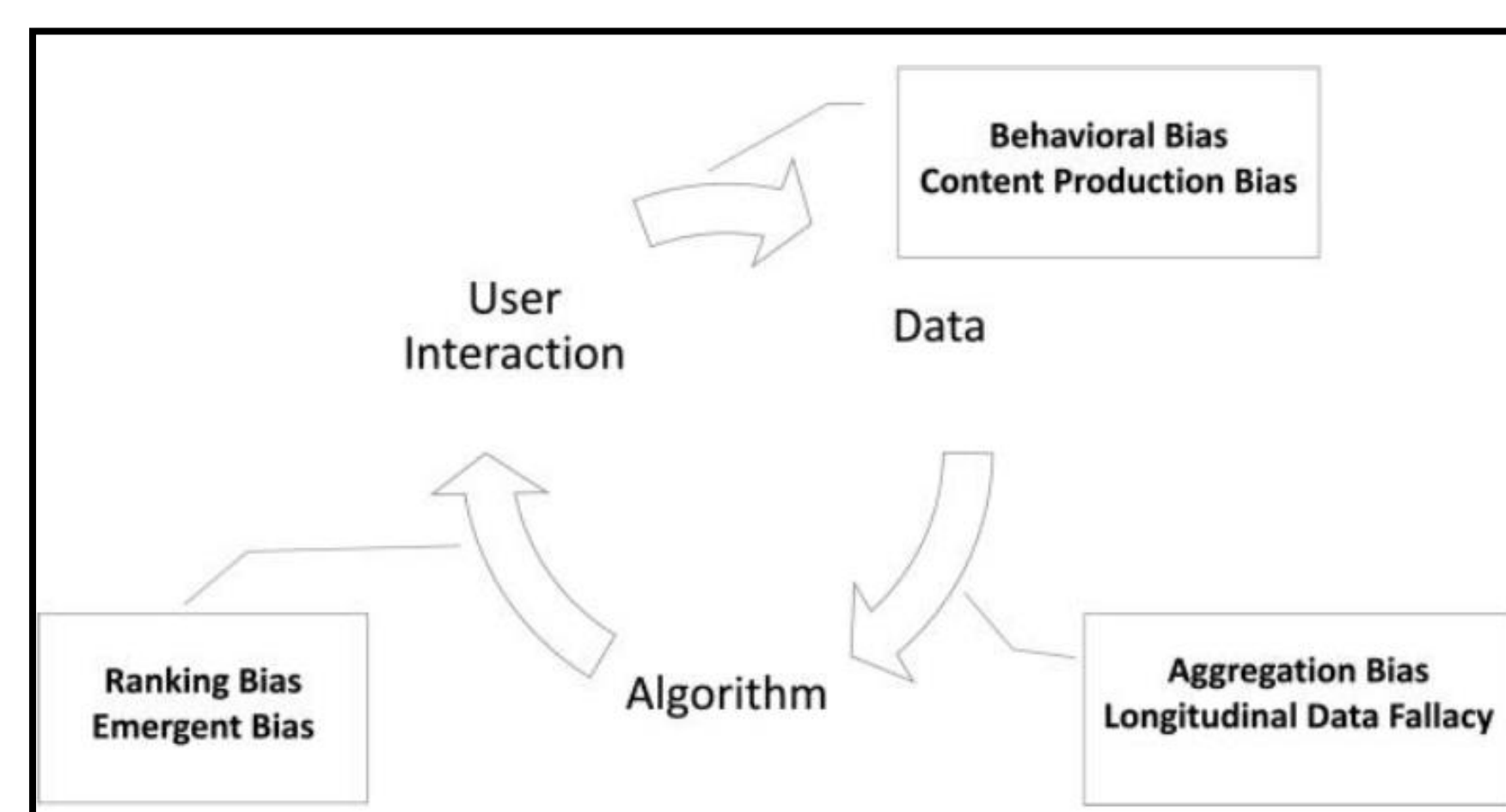


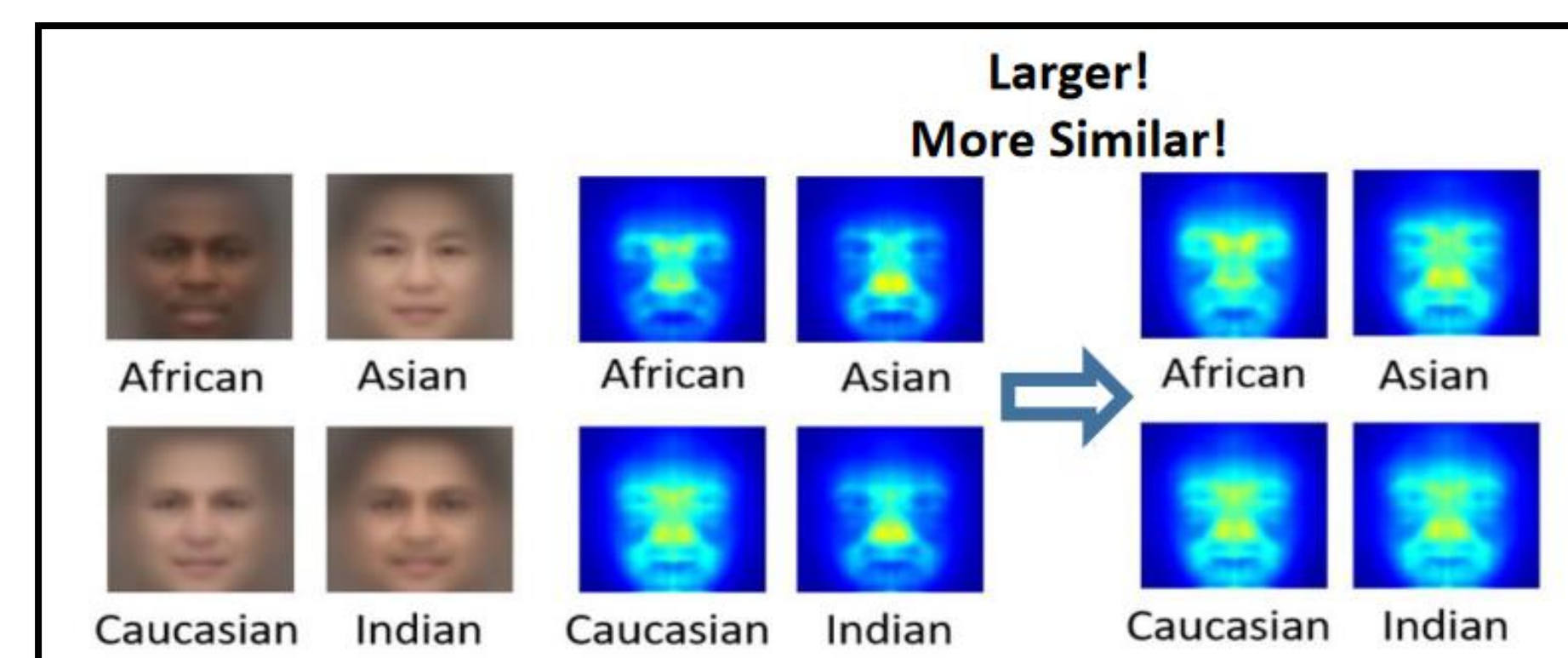
Figure 2: Biases provenance [1]

3. Protocol

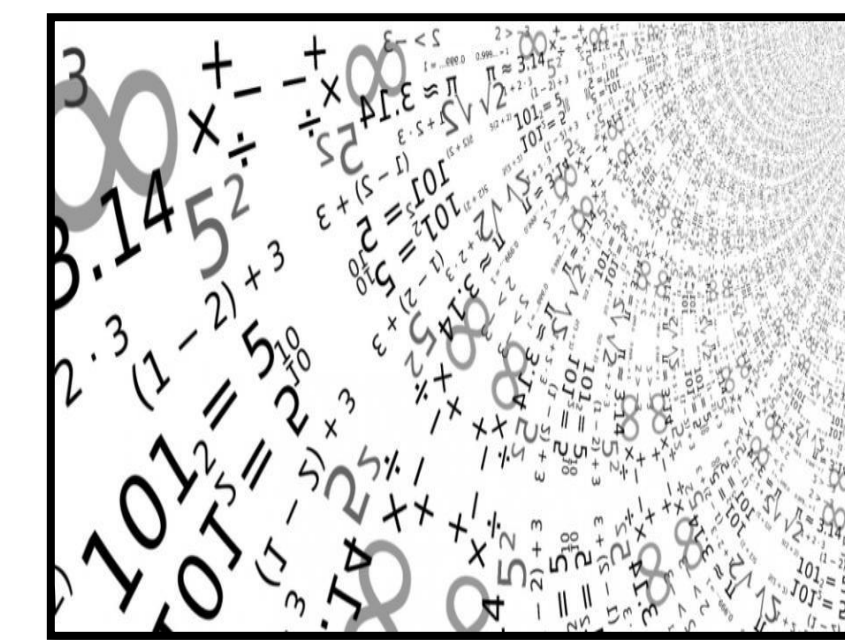
Objective: Establish a process for evaluating a biometric system following authorities requirements (Fido, ISO).

We propose three lines of research:

1- Control the chain to obtain a fair biometric system [2]



2- Define a rule of **evaluation** referring to our knowledge obtained in step 1



3- Apply our rule to unfair biometric systems know



Fair? ● Score?
● Score?

4. Benefits



Figure 3: Towards fairness biometric systems evaluation [3]

[1] Mehrabi, N., Morstatter, F., Saxena, N., Lerman, K., & Galstyan, A. (2021). A survey on bias and fairness in machine learning. ACM Computing Surveys (CSUR), 54(6), 1-35

[2] Huang, L., Wang, M., Liang, J., Deng, W., Shi, H., Wen, D., Zhang, Y., and Zhao, J. (2023). Gradient Attention Balance Network: Mitigating Face Recognition Racial Bias via Gradient Attention. In 2023 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), pages 38-47, Vancouver, BC, Canada. IEEE

[3] Miller, J. (2019, May 25). Amazon shareholders reject proposal to limit sales of AWS face recognition software. TechSpot. Retrieved March 14, 2024, from <https://www.techspot.com/news/80232-amazon-shareholders-reject-proposal-limit-sales-aws-face.html>