

Legal Obligations for AI Explainability: Open Questions on Technical Methods



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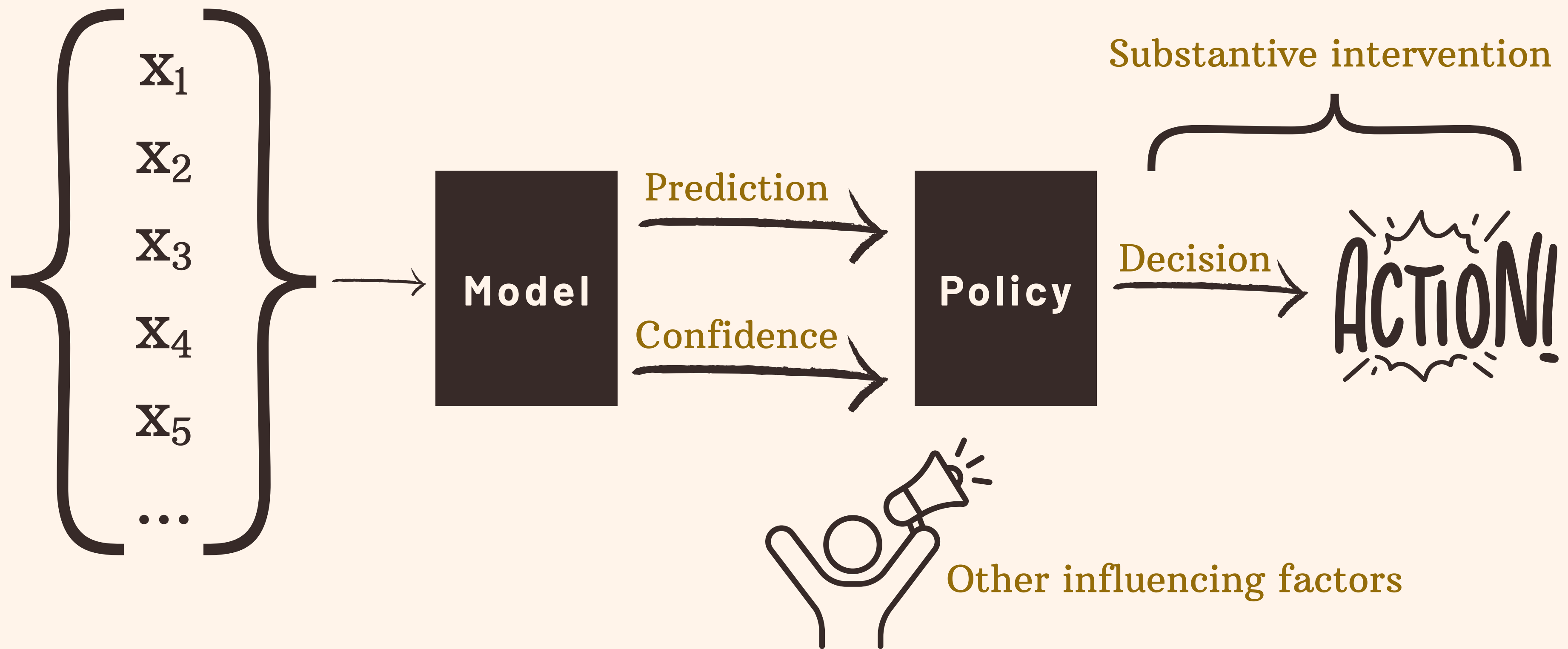
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AI Explainability

The degree to which a system or a set of practices and tools support a person's ability to:

Explain and communicate the rationale underlying the behaviour of the system

Demonstrate that the processes behind its design, development, and deployment have been undertaken in ways that ensure its sustainability, safety, fairness, and accountability across its particular contexts of use and application

Legal obligations for ADMS

GDPR Article 15

‘provide certain kinds of information to the data subject, including, but not limited to, the purpose of the personal data collected and processed, **meaningful information about the logic** in processing their personal data, and the significance and the envisaged consequences of such processing for the data subject’

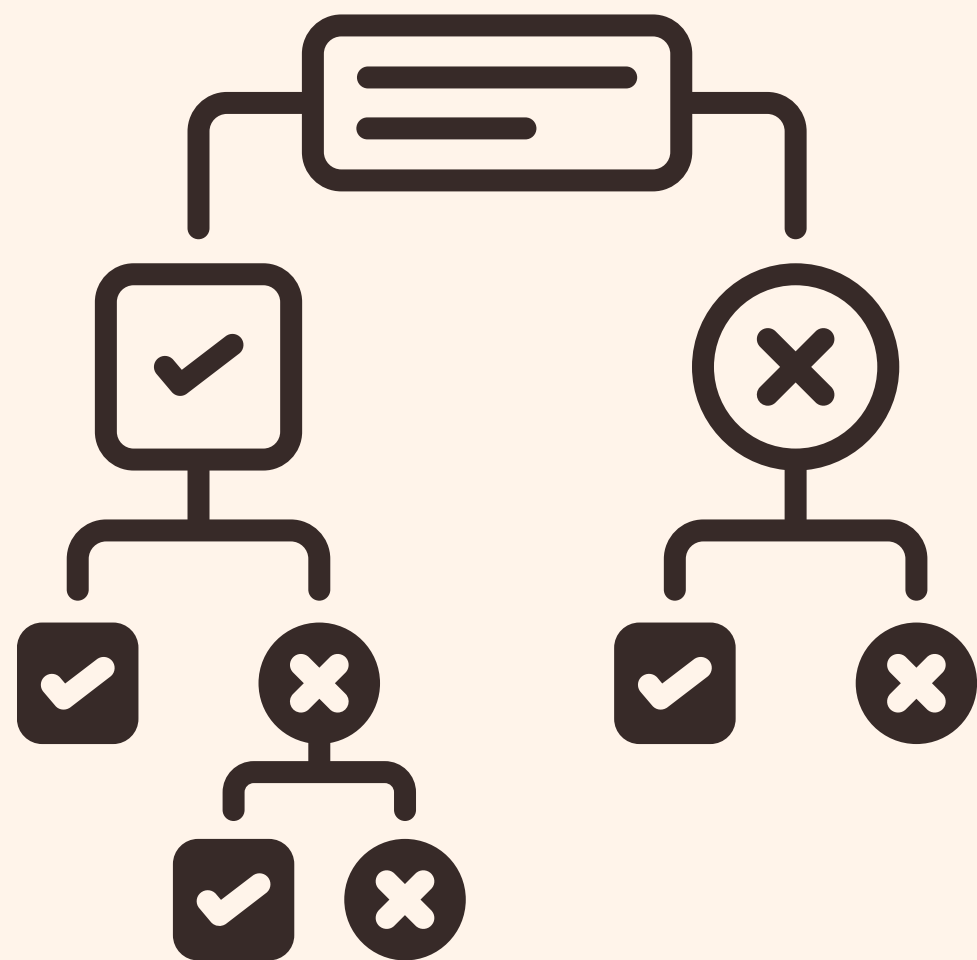
EU AI ACT Article 50

‘the natural persons concerned are informed that they are interacting with an AI system’

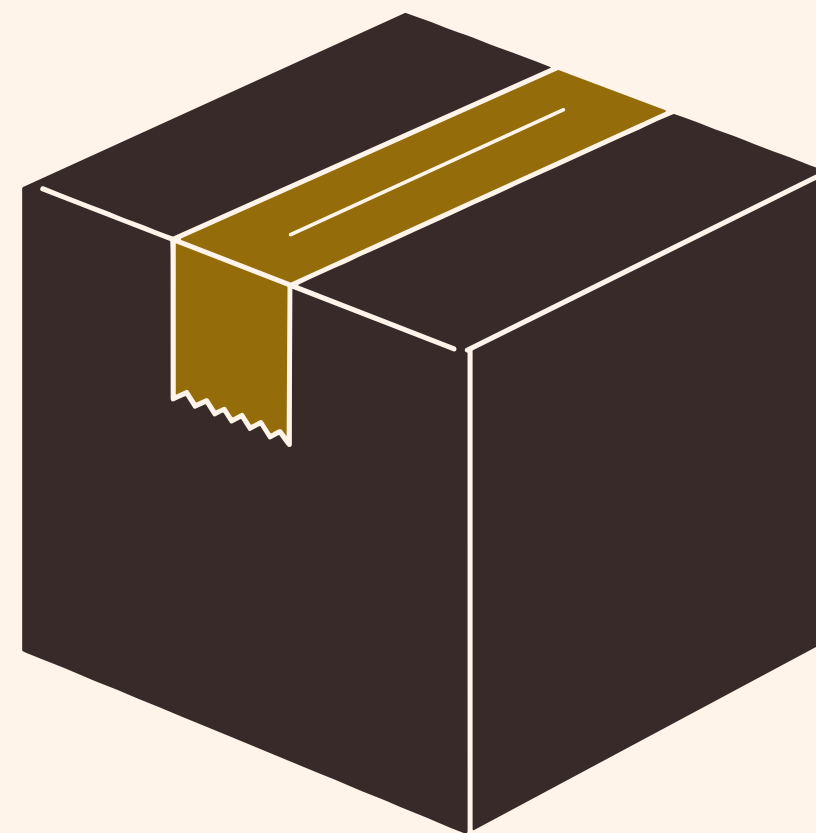
EU AI ACT Article 86

‘clear and meaningful explanations of the role of the AI system in the decision-making procedure and the main elements of the decision taken’

XAI Methods



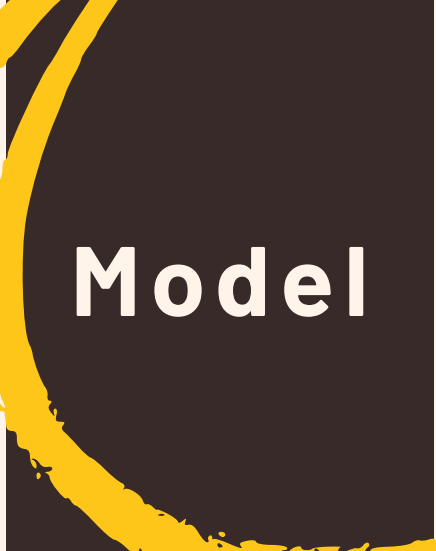
Interpretable



Black-box

Functional Explanations

- X_1
- X_2
- X_3
- X_4
- X_5
- ...



Prediction

Confidence



Decision

ACTION!

Substantive intervention



Other influencing factors

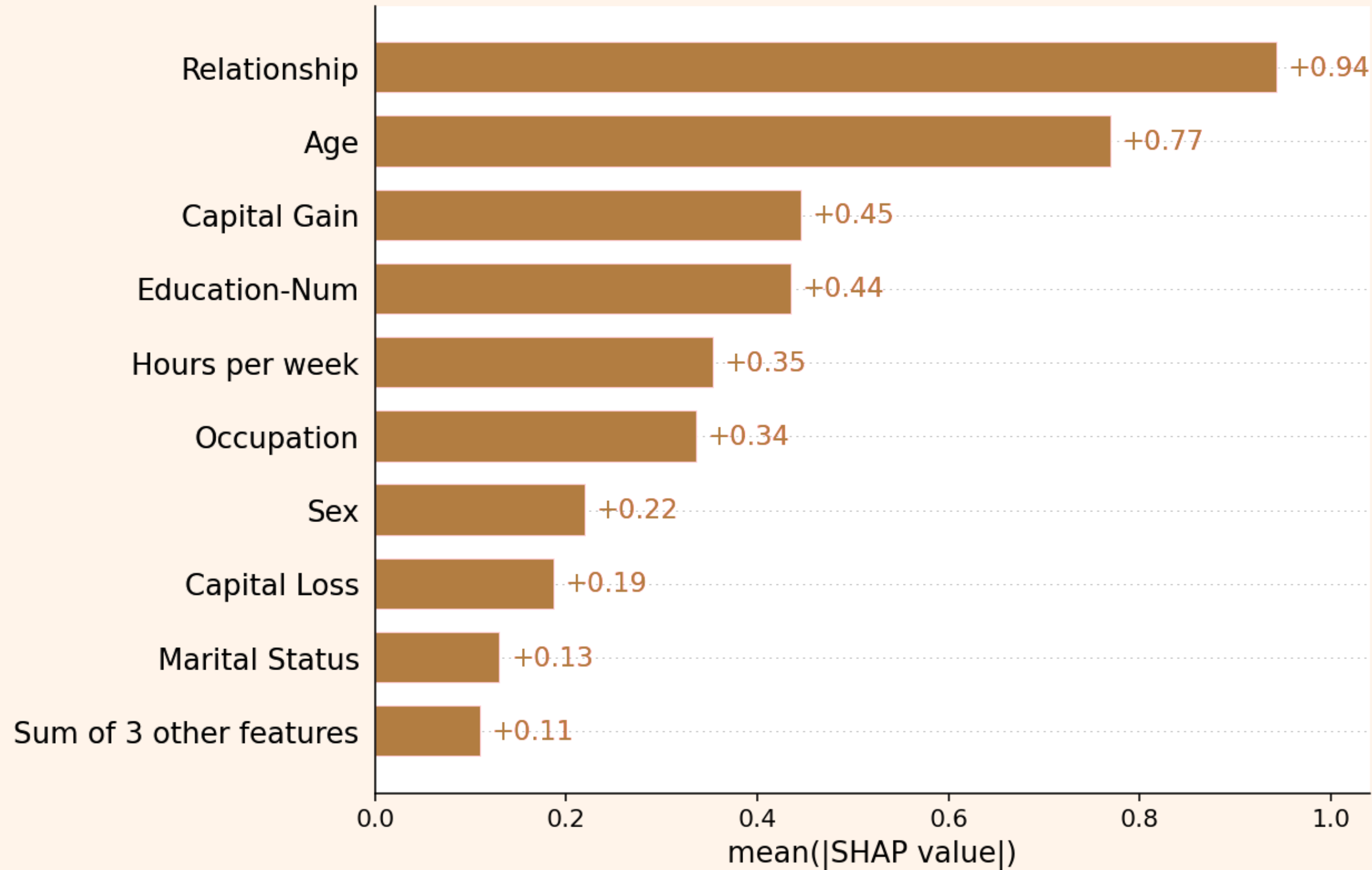
Global



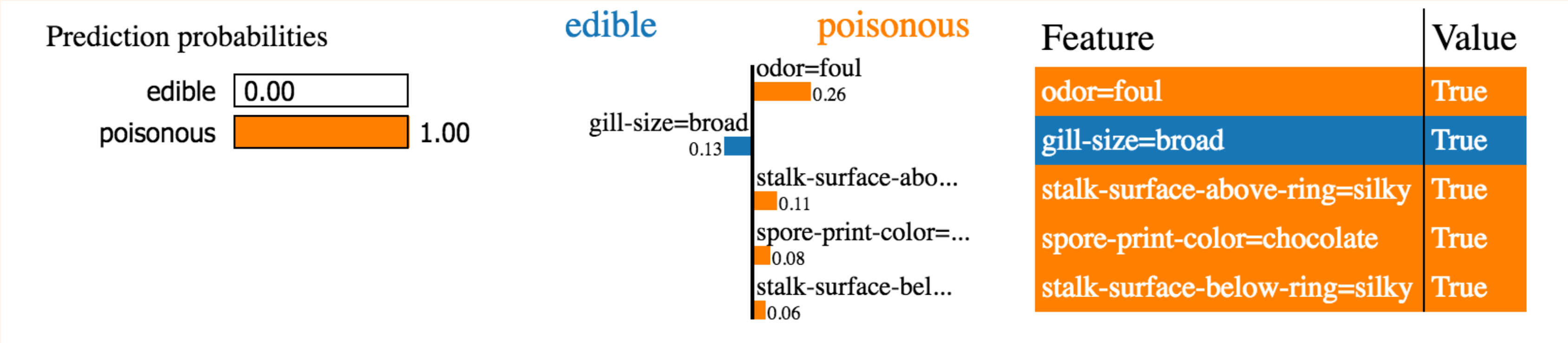
Local

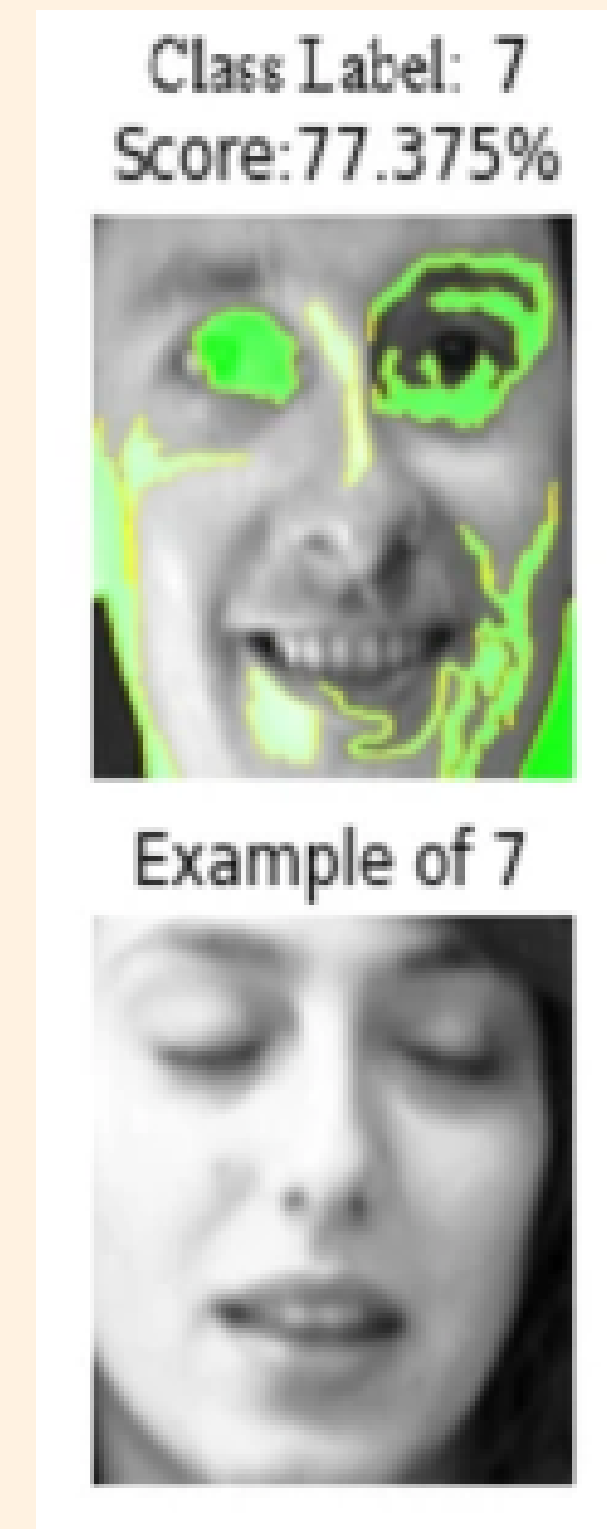
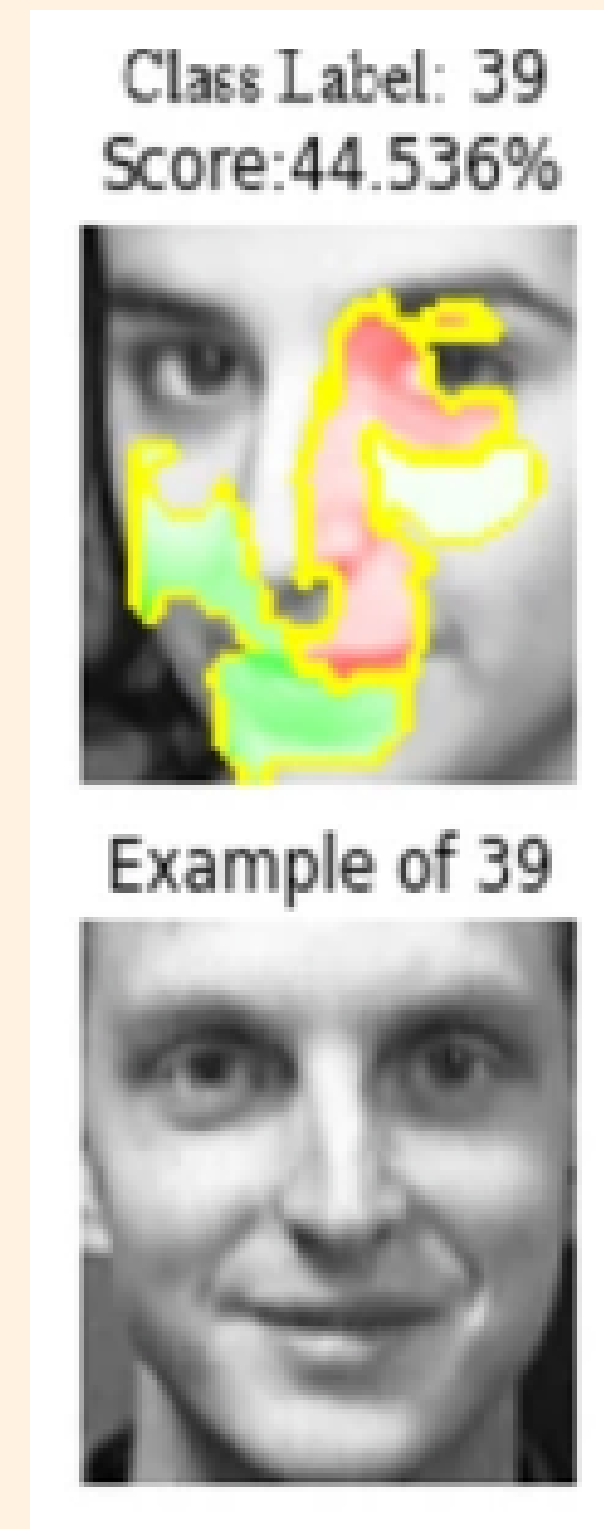
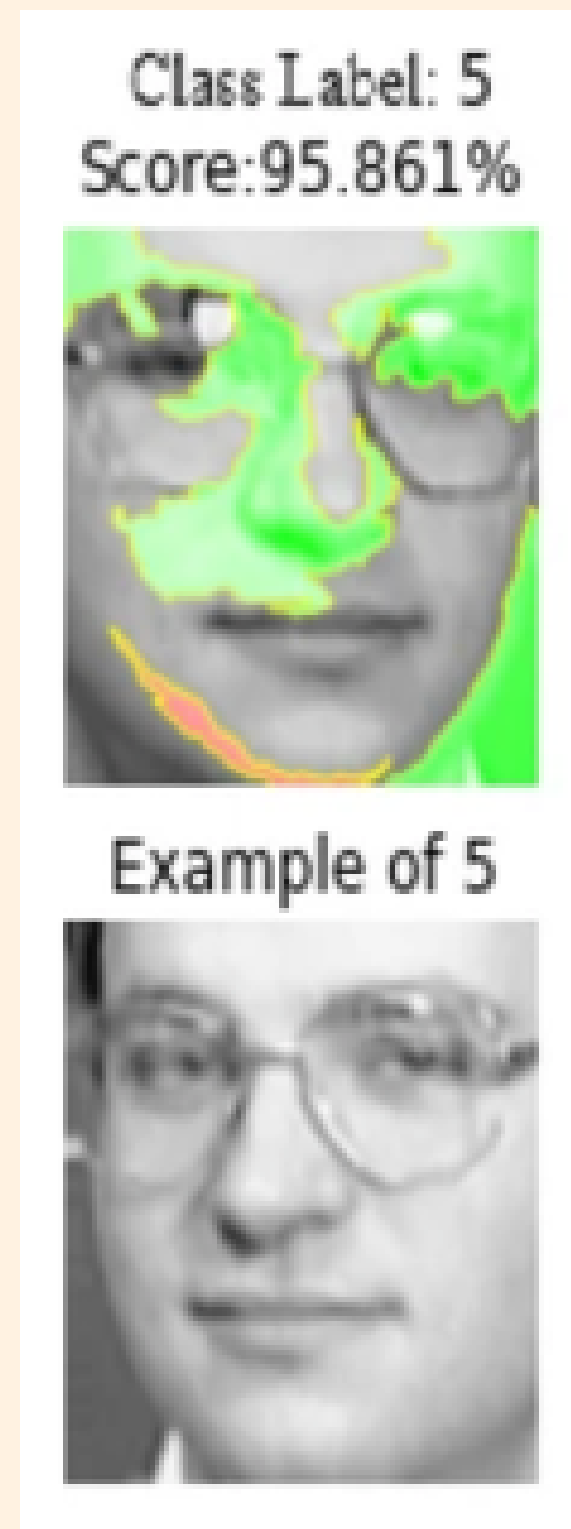
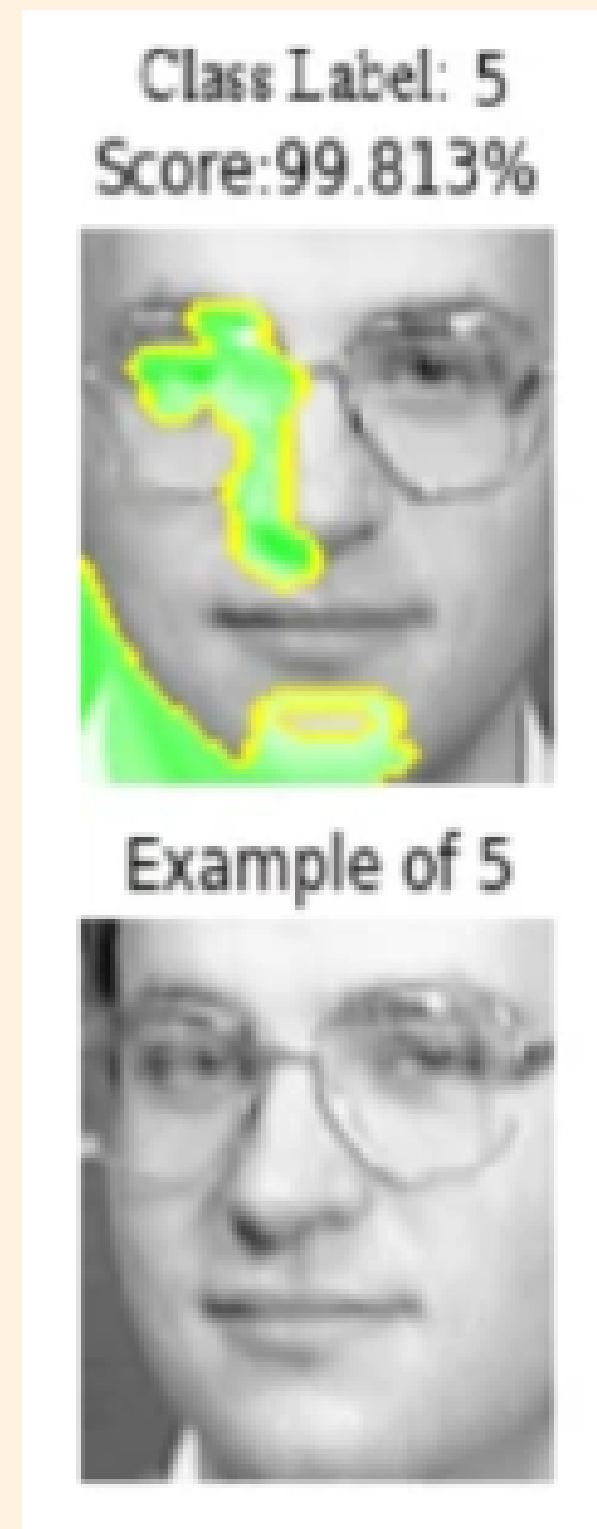


SHapely Additive Explanations (SHAP)



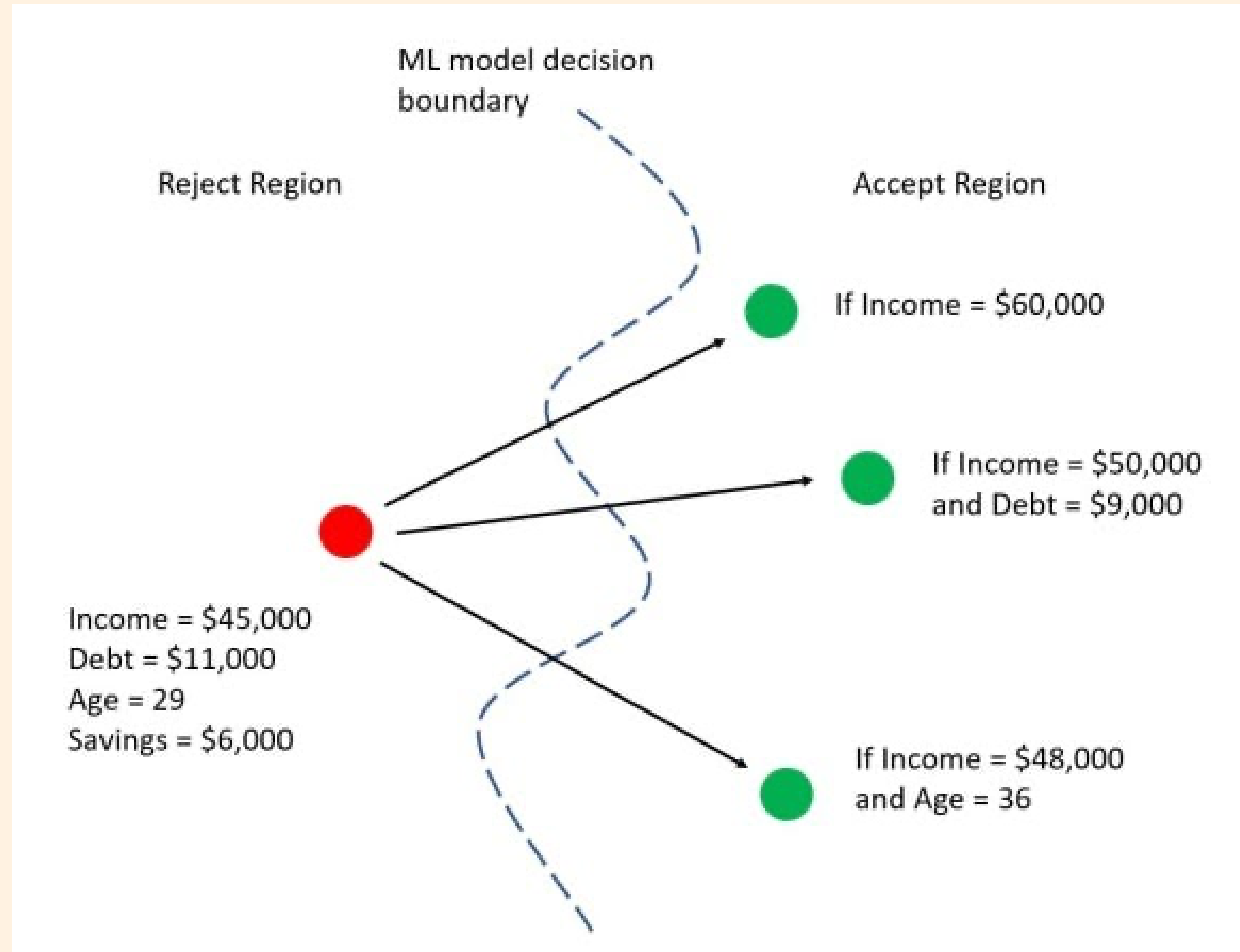
Local Interpretable Model-agnostic Explanations (LIME)





Rajpal, A. et al. (2023). “XAI-FR: Explainable AI-Based Face Recognition Using Deep Neural Networks.” *Wireless Pers Commun* 129, pages 663–680. Available at: <https://doi.org/10.1007/s11277-022-10127-z> (Accessed 22.5.24).

Counterfactual Explanations



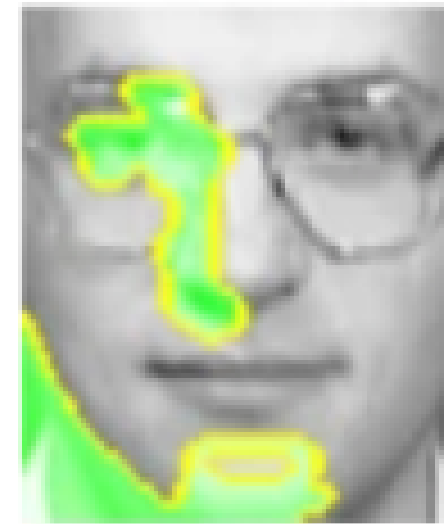
You will be accepted if:

- your income increases to \$60,000,
- your income increases to \$50,000 while debt decreases to \$9,000 or
- you're 7 years older with a slightly higher income.

Police Stop and Search



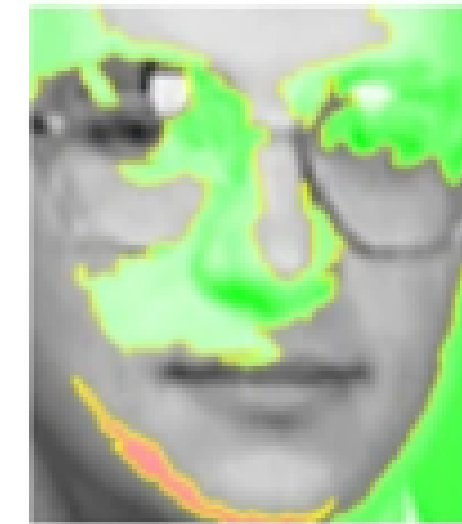
Class Label: 5
Score:99.813%



Example of 5



Class Label: 5
Score:95.861%



Example of 5



functional explanation $\neq$ legal justification

- Whether XAI methods can 'help' to satisfy legal obligations depends on the nature and scope of the applicable legal obligations
- XAI could help understand the underlying logic of a fully automated system and thus help demonstrate compliance with e.g., Article 15 of GDPR

Open Questions

WHAT ?

explanations are required

types of ADMS are explanations most likely to support

motivates their creation and use, if XAI methods are not legally sufficient

HOW ?

does sectoral context affect the usefulness of XAI methods

can legal obligations inform the design of technical explainability approaches

can explanations be evaluated across legal and technical criteria

WHO ?

is legally entitled to receive explanations

WHERE ?

can XAI methods have been practically useful for legal compliance
can we definitively say that XAI methods do not satisfy legal obligations
can explanations be evaluated across legal and technical criteria

Thank you!

Any questions?



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