Tópicos selectos de computación

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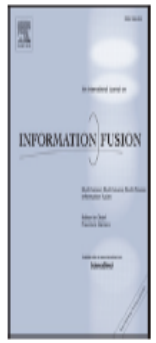

Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI

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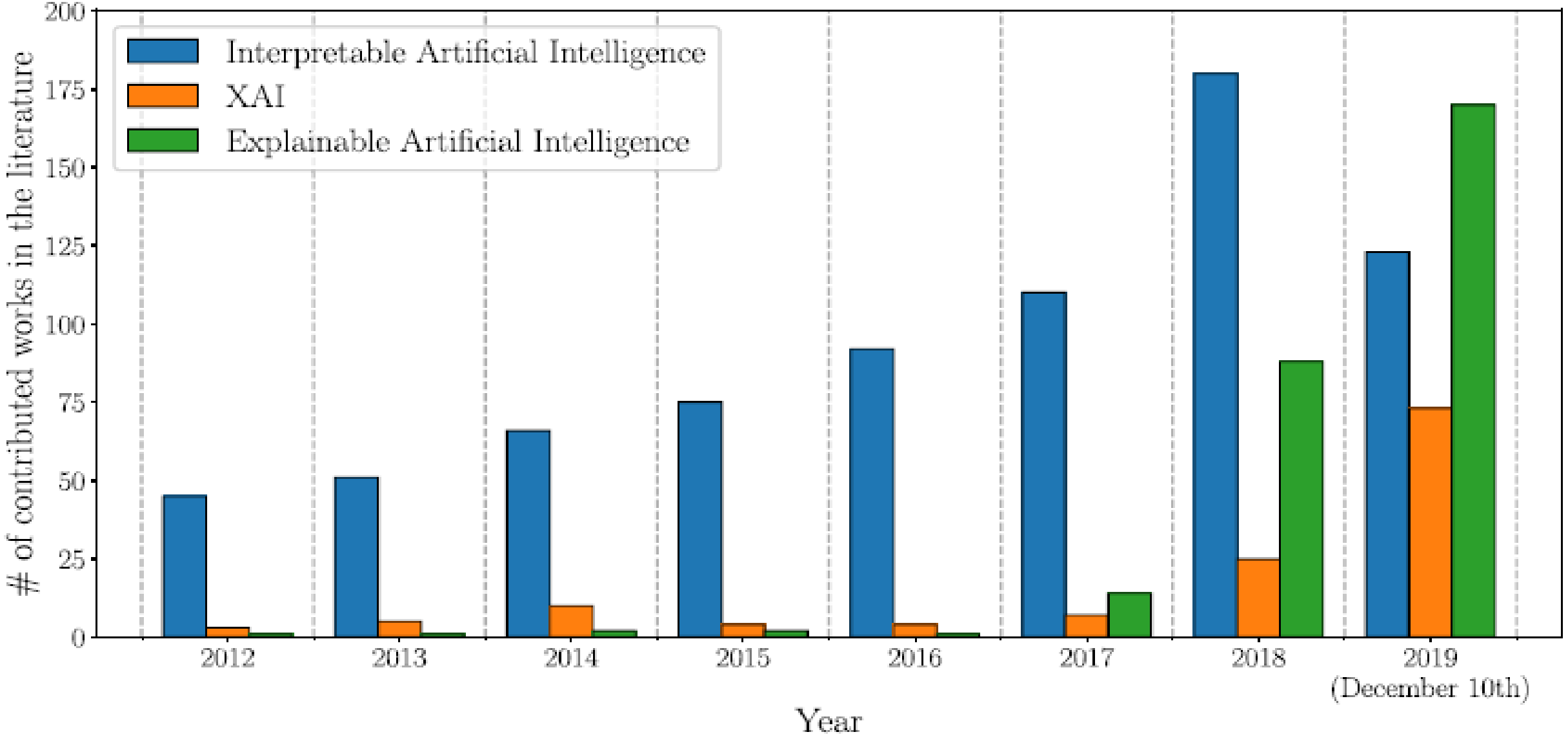
DARPA's Explainable Artificial Intelligence Program

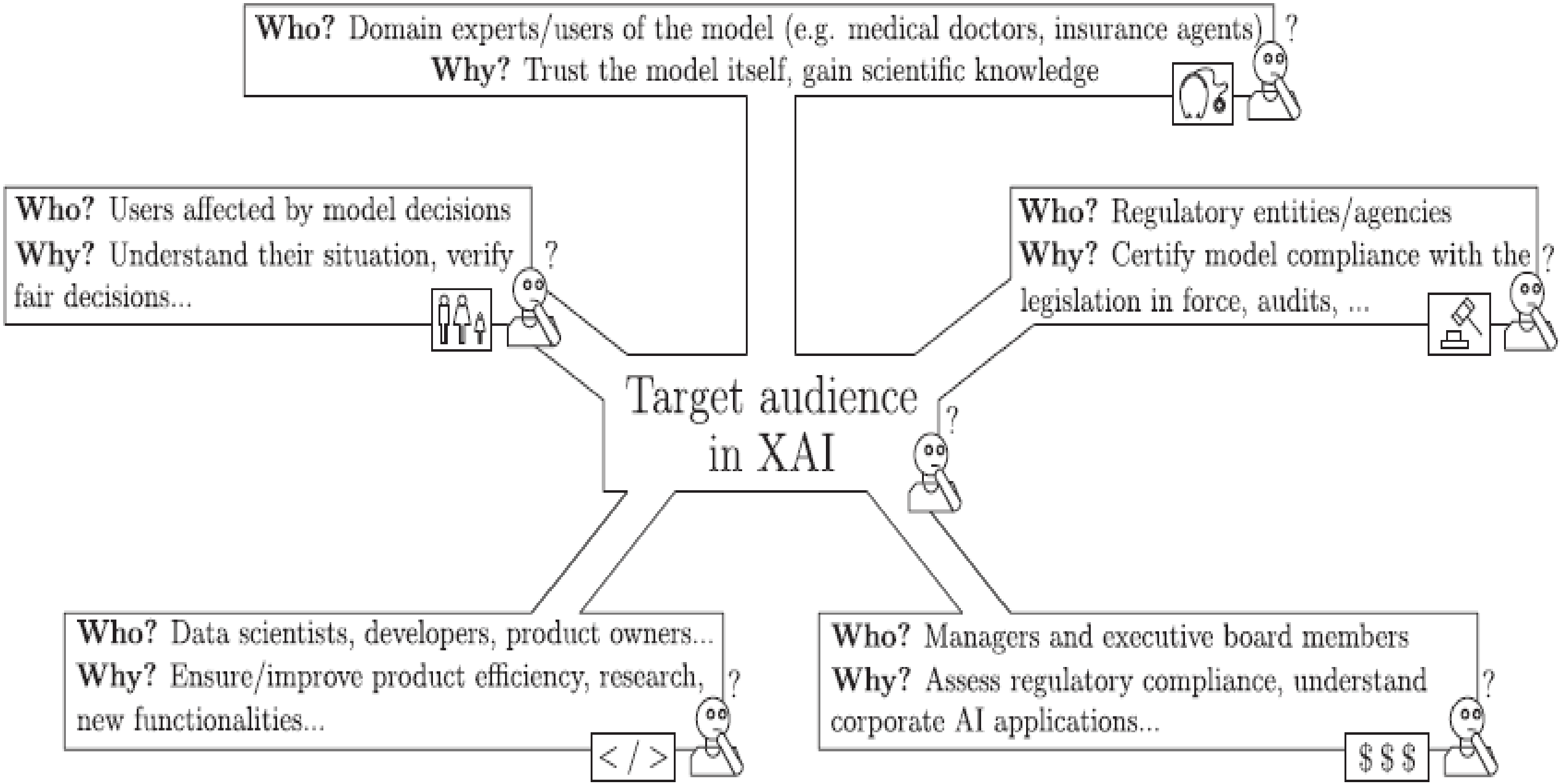
David Gunning, David W. Aha

 ISSN 0738-460

Evolution of XAI (eXplainable AI)



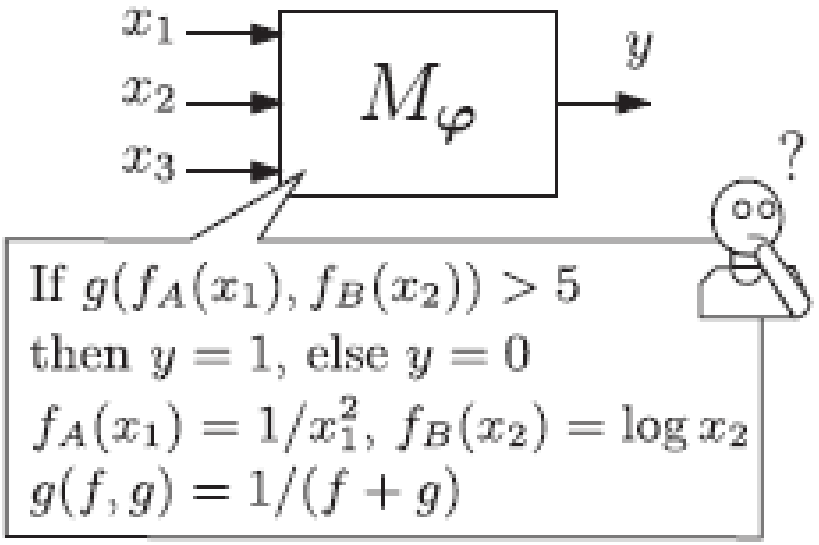
Purposes of explainability in ML(machine learning) models



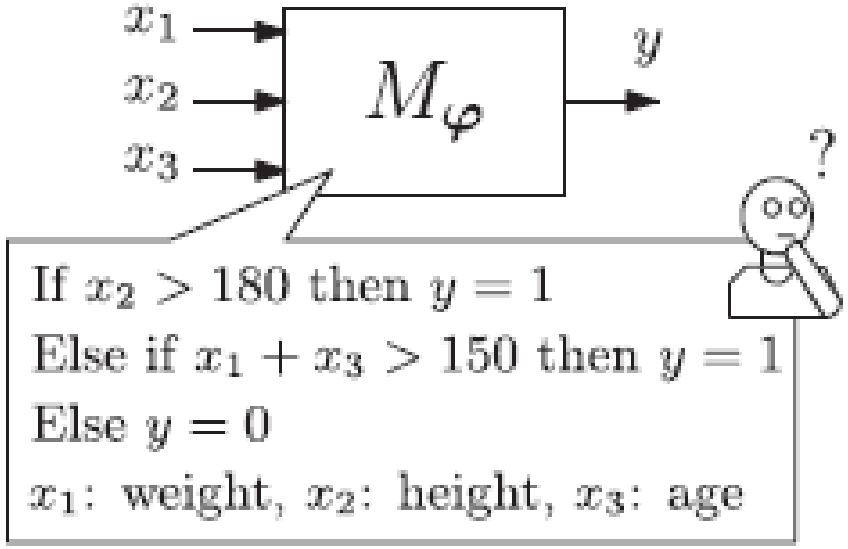
Goals pursued in the reviewed literature toward reaching explainability, and their main target audience

XAI Goal	Main target audience (Fig. 2)
Trustworthiness	Domain experts, users of the model affected by decisions
Causality	Domain experts, managers and executive board members, regulatory entities/agencies
Transferability	Domain experts, data scientists
Informativeness	All
Confidence	Domain experts, developers, managers, regulatory entities/agencies
Fairness	Users affected by model decisions, regulatory entities/agencies
Accessibility	Product owners, managers, users affected by model decisions
Interactivity	Domain experts, users affected by model decisions
Privacy awareness	Users affected by model decisions, regulatory entities/agencies

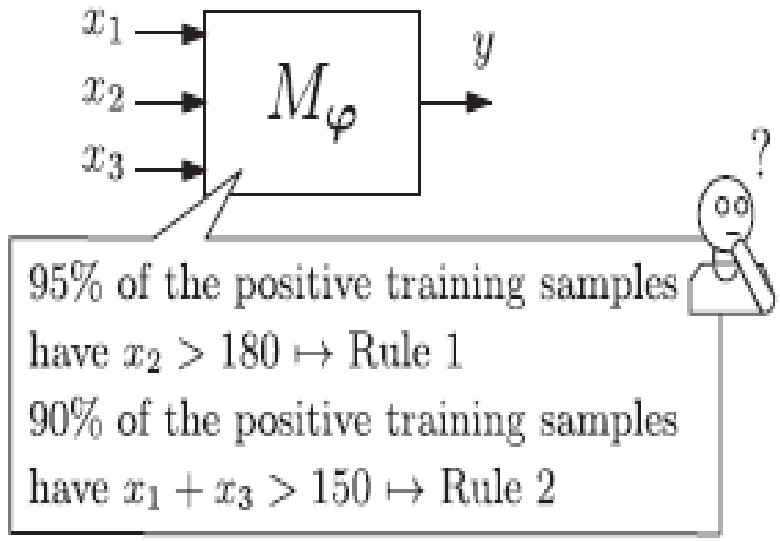
Levels of transparency characterizing a ML model



a) simulatability



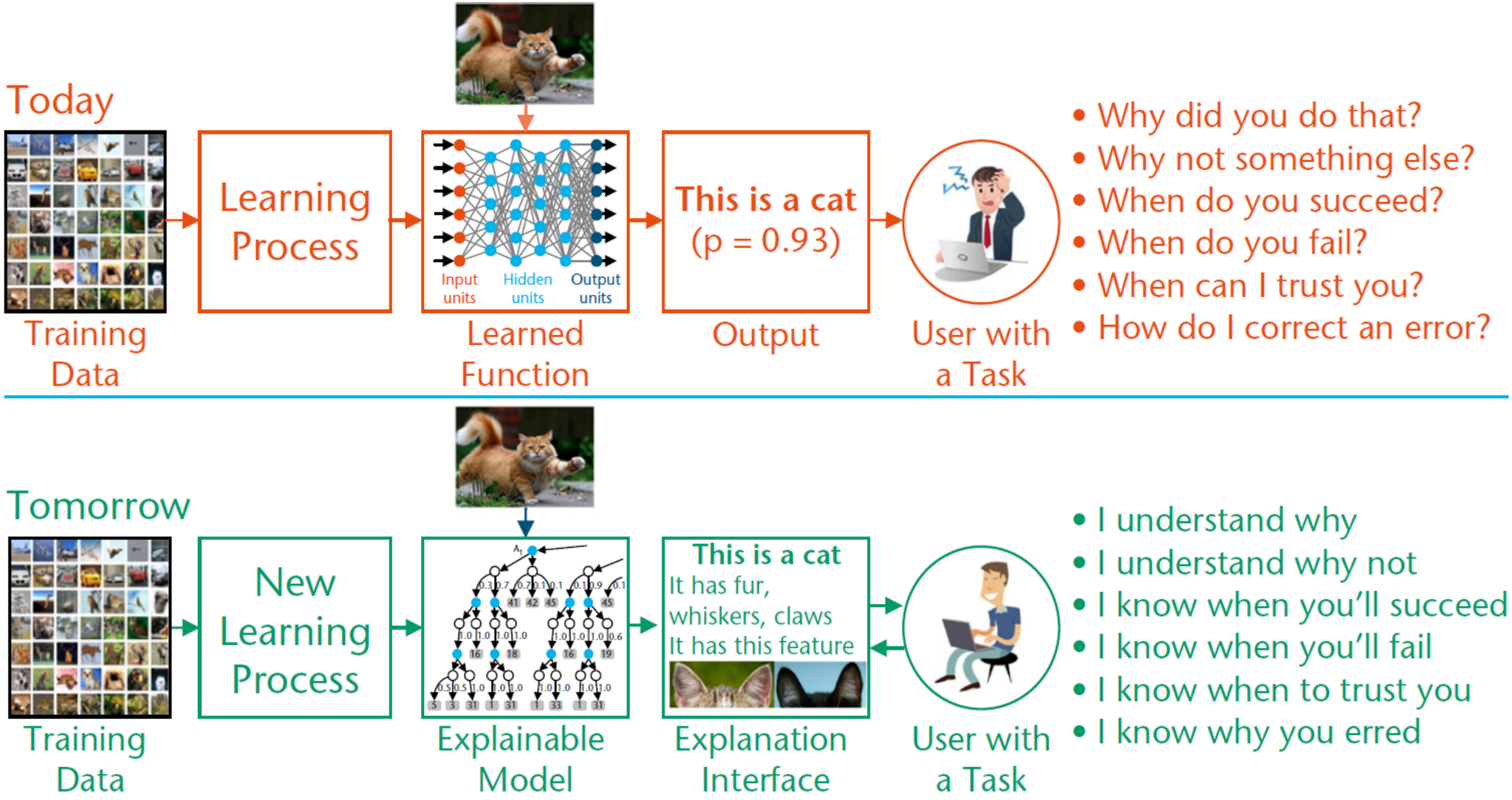
b) decomposability



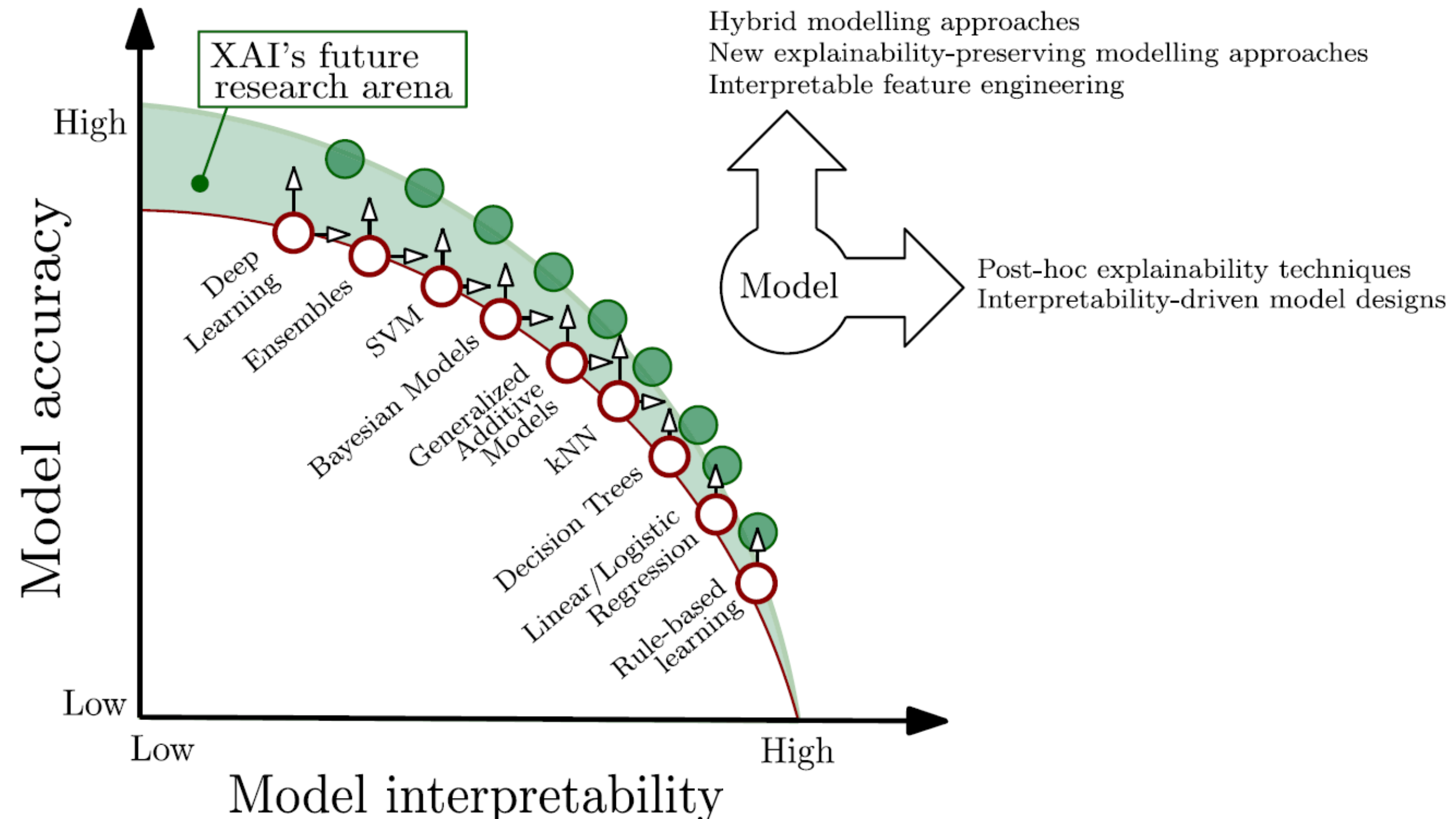
c) Algorithmic transparency

Targets for explainability may include:

- a given example,
- the output classes, or
- the dataset itself



Gunning, D., & Aha, D. (2019). DARPA's Explainable Artificial Intelligence (XAI) Program. *AI Magazine*, *40*(2), 44-58. https://doi.org/10.1609/aimag.v40i2.2850.


XAI's future research arena
Hybrid modelling approaches
New explainability-preserving modelling approaches
Interpretable feature engineering
Model
Post-hoc explainability techniques
Interpretability-driven model designs
Deep Learning
Ensembles
SVM
Bayesian Models
Generalized Additive Models
kNN
Decision Trees
Linear/Logistic Regression
Rule-based learning
High
Low
Low
High
Model accuracy
Model interpretability

Post-hoc explainability approaches for a ML model