Transforming Black-Box Models into Explainable AI for Breast Cancer Recognition

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Introduction 1

How can we, as user's, determine a model's "thought process"?

Concerns in AI Decision system:

Healthcare risk assessment: Unfavorable treatment of certain groups based on race and gender.

What is Explainable AI(XAI)?

Explainable AI is a growing field within AI development where the aim to make AI models more trustable and transparent to humans.

Why explore Explainability?

Understantable AI decisions can help to identify and address fairness issues.

Challenges of XAI in Healthcare 2

XAI methods offer explanations, but only clinicians can interpret them to identify ML model failures.

XAI in medicine leverages ML experts comfort with mathematical explanations.

Explainable AI

Humans can:

Trust **Understand** **Manage**

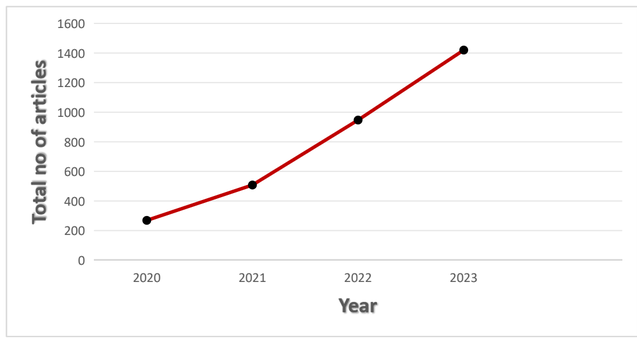
Research Methodology 3

Examined XAI Techniques in Breast Cancer (2020-2023)

Collected Data from Google scholar using specific keywords

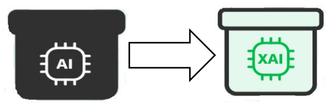
Filtered for English language article

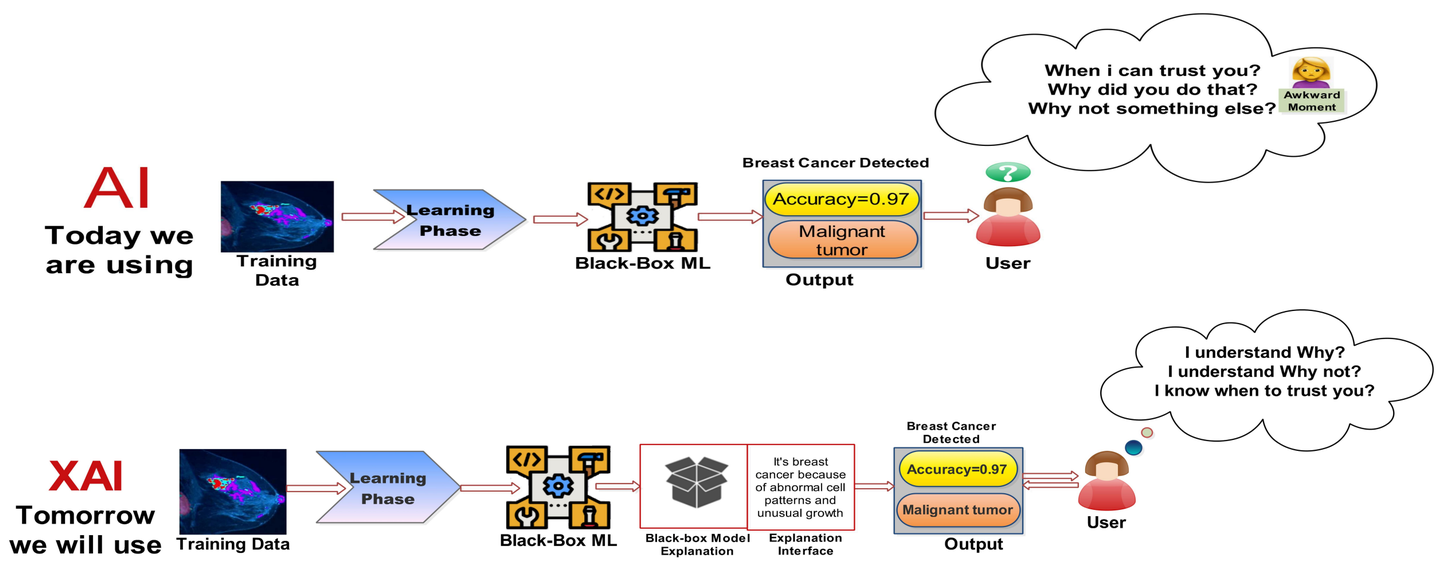
Review 30 selected articles



Insights into Explainable AI 4

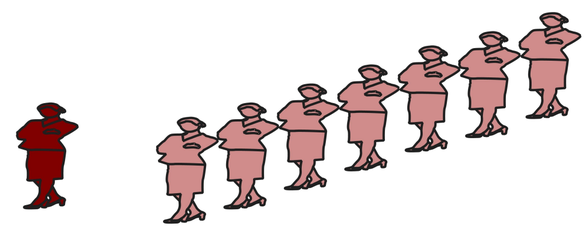
Why its important?





Breast Cancer Awareness 5

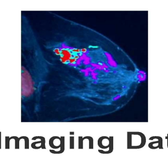
- Breast cancer is a disease in which malignant cancer cells form in the tissue of the breast.
- According to **WHO** Breast cancer caused 670,000 deaths globally in 2022.



Breast cancer affects 1 in 8 women

Data used as Input 6

Tabular Medical Records



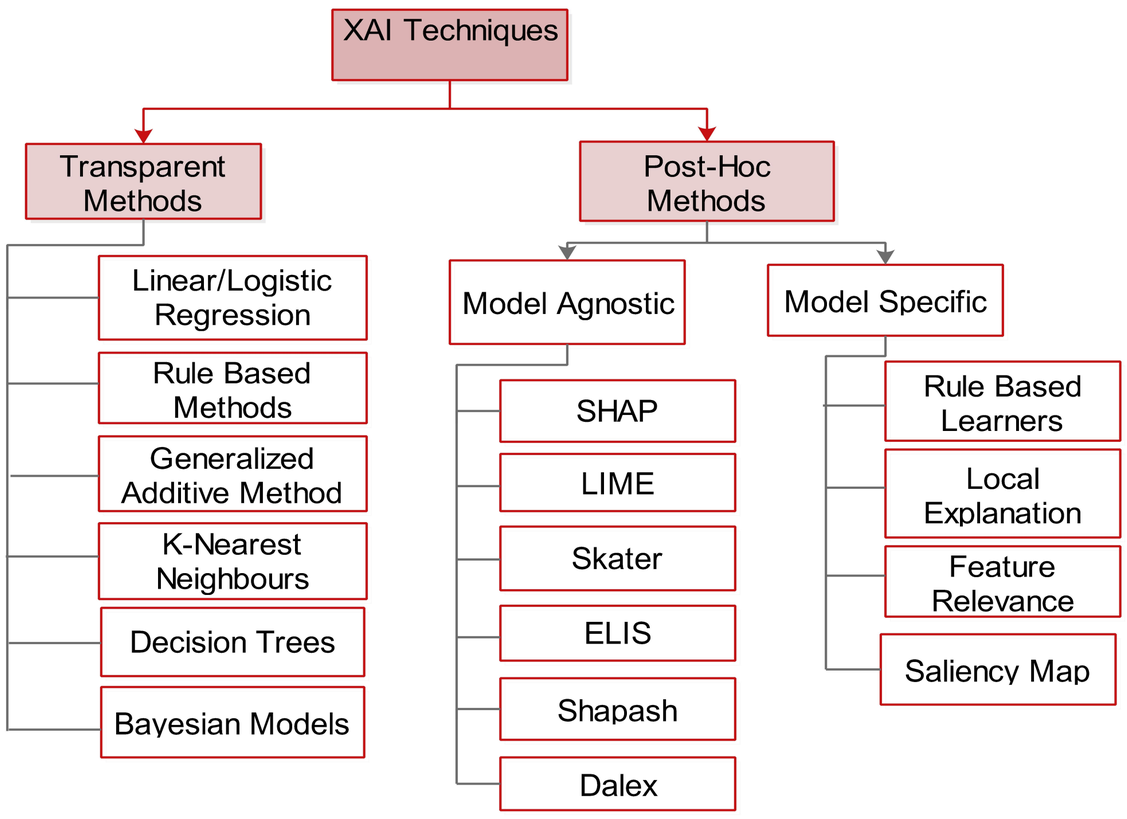
Imaging Data

Text Data

Conclusion 8

Explainable AI is not just a technological advancement, it's a necessary step toward creating AI systems that are beneficial, trustworthy, and accountable for everyone.

Explanations 7



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2. Maouche, Ikram, et al. "An explainable ai approach for breast cancer metastasis prediction based on clinicopathological data." IEEE Transactions on Biomedical Engineering 70.12 (2023): 3321-3329.
3. Saeed, Waddah, and Christian Omlin. "Explainable AI (XAI): A systematic meta-survey of current challenges and future opportunities." Knowledge-Based Systems 263 (2023): 110273.

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