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University**

Enhancing Breast Cancer Recognition using Vision Transformer and Explainable AI

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Academic year: 2024/2025
Doctoral study period: 2024-2028**

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Research Object:

- Visualize Vision Transformer with Explainable Artificial Intelligence for decision- making process.
- Improve the transparency and understandability of the Artificial Intelligence decision-making process in breast cancer recognition for both specialists and non-specialists.

Objective: A literature analysis is being conducted to explore how traditional Deep Learning Models and Large Language Models enhance transparency using Explainable AI in breast cancer recognition. □



- Examines critical challenges and emerging advancements shaping the development of trustworthy Artificial Intelligence in medical diagnostics. It aims to enlighten professionals on the interpretability and transparency of Explainable Artificial Intelligence systems, particularly in breast cancer recognition.
- I explored the role of Large Language Models (LLMs) in medical imaging and their potential to enhance breast cancer diagnostics.
- By reviewing and analyzing the latest advancements in XAI, I investigated how these technologies can improve model transparency, support clinical decision-making, and provide more interpretable AI-driven insights.

The plan for the reporting half-year and its implementation:

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Exams 2024/2025 (2 nd semester)		
Plan	Completion Date	Condition
Research methods and methodology in computer science and computer engineering. 30-06-2025	Research methods and methodology in computer science and computer engineering. 29 May, 2025	Exam is completed on 29 th May, 2025. There are 4 assignments in the subject 2 presentations , 1 research proposal , 1 research paper. All tasks are ongoing.
Digital signal processing. 30-06-2025	Digital signal processing. 26 May, 2025	Exam is completed on 26 th May, 2025. There are 4 tasks in the subject. All tasks are ongoing.

The plan for the reporting half-year and its implementation:

Conference participation 2024/2025 (1 st semester)		
Plan	Completed	Conference type
1	Authors: Dastgeer, S., Treigys, P. Poster title: Transforming black-box models into Explainable AI for breast cancer recognition. Conference name: DAMSS 2024 Date: November 28-30, 2024. Location: Druskininkai, Lithuania.	International

Publications 2024/2025 (First half of the year)			
Plan	Completed	Condition	Publication Type

Information about international events and publications

Participation in international conferences

Plan	Description
1	Authors: Dastgeer, S., Treigys, P. Poster title: Transforming black-box models into Explainable AI for breast cancer recognition. Conference name:DAMSS 2024 Date: November 28-30, 2024. Location:Druskininkai, Lithuania.

Publications (with citation rate only)

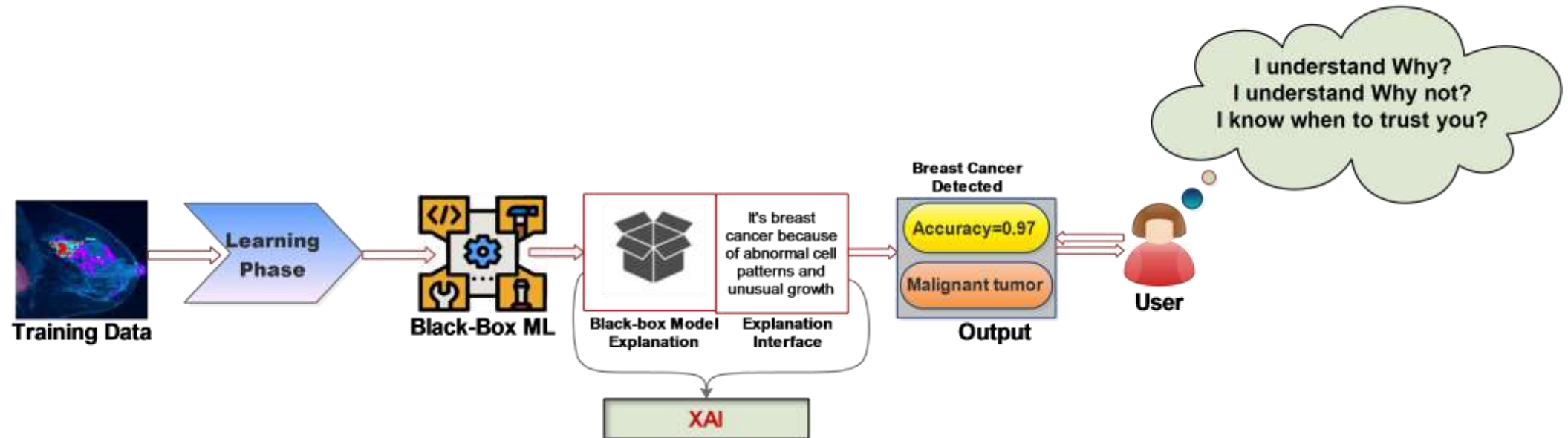
Bibliographic description	Condition

Stages of research and dissertation preparation:

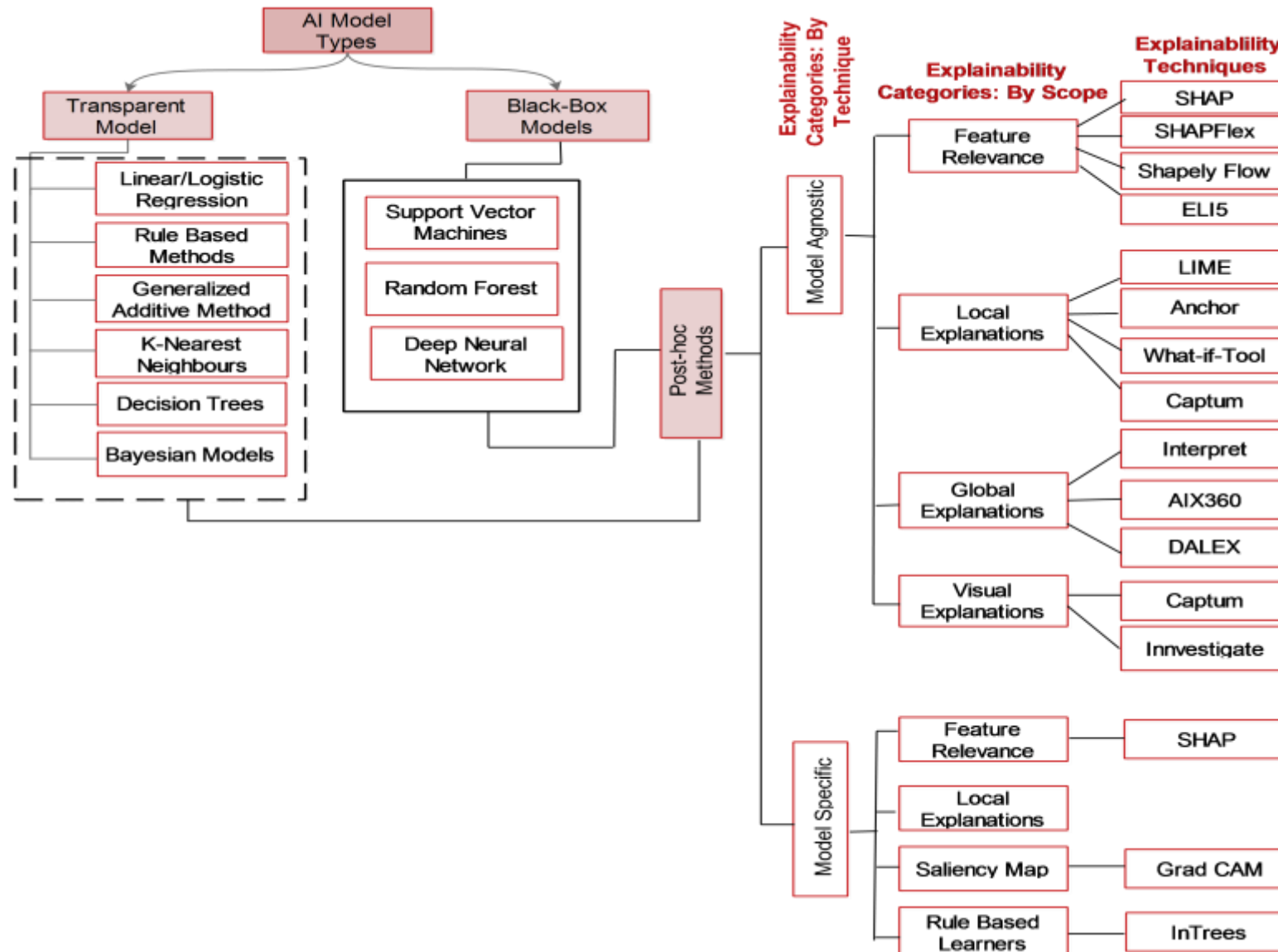
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Title of the work	Deadlines	Notes
1 Review and analysis of scientific research on the topic of the dissertation (in Lithuania and abroad):		An initial review and analysis of scientific research was conducted.
1.1. Specification of the research object of the dissertation.	October 2024- March 2025	The topic significance is presented in the international conference
1.2. An overview of Explainable AI techniques in Breast Cancer recognition	October 2024- September 2025	The review has almost completed and we submit the reveiw paper in any reputable journal shortly.
1.3. Summarizing and presenting the overview in the description of the analytical part of the dissertation		

Need of Explainable AI



Taxonomy of AI Models and Explainability Approaches:





Thank you.

