The background features three vertical stripes on the left: a wide pink one, a narrower blue one, and a narrow beige one. On the right side, there is a grid of small pink dots that fades out towards the center.

USING LARGE LANGUAGE MODELS TO IDENTIFY BREAST CANCER

Duarte Silva

NOVA-FCT

July, 2025

OVERVIEW

- Problems
- Context and Motivation
- Literature Review
- Implementation

PROBLEMS

Analysis

- Complex
- Time-Consuming
- Rigid protocols

LLMS

- Textual format
- Ethics
- Accuracy

CONTEXT AND MOTIVATION

- **Popularity**
- **User friendliness**
- **Integrability**
- **Trained on diverse data**



LITERARY REVIEW

1

Conventional exam methods

- Mammography, Ultrasound and Thermogram
- Tomosynthesis
- Histopathology



LITERARY REVIEW

2

Application of Deep Learning in conventional exam methods

- Improved accuracy and efficiency
- Less dependency on human error
- ➔ Detection accuracy ranging between 82.5% and 99.72%

- Computationally intensive
- Good quality dataset scarcity
- Poor dataset and method diversity

LITERARY REVIEW

3

Application of LLMs in conventional exam methods

- More user-friendly approach / Ability to use text
- Models trained on vast datasets
- ➔ Detection accuracy ranging between 0% and 100%*

- Potential hallucinations
- “Black box” problem
- Struggle with visual data
- Privacy and ethical concerns
- Trained on static data

PROPOSED IMPLEMENTATION



Model Retrieval and
Analysis



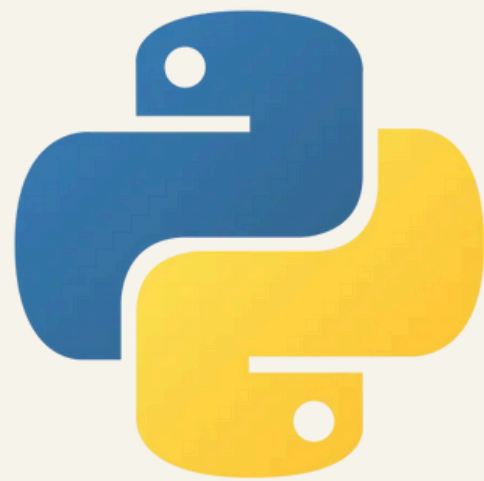
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PROPOSED IMPLEMENTATION

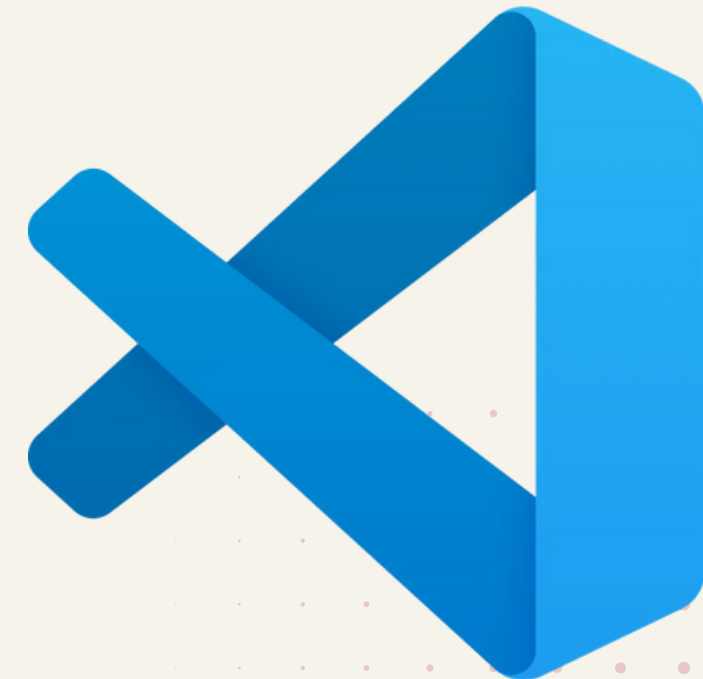
Fine-tuning and Model
Customisation



PROPOSED IMPLEMENTATION



Environment Setup
and Result Analysis



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PROPOSED WORKFLOW

	ID	Task Name	Start	2025			2025			2025		
				02	03	04	05	06	07	08	09	10
⋮	1	Conduct comprehensive literature review	2025-03-03									
⋮	2	Model Selection and Retrieval	2025-04-07									
⋮	3	Initial Environment Setup	2025-04-22									
⋮	4	Model Evaluation	2025-05-07									
⋮	5	Result Registration and Study	2025-05-19									
⋮	6	Fine-Tuning and Re-Evaluation	2025-06-03									
⋮	7	Preparation Document Writing	2025-05-15									
⋮	8	Iterative Refinement	2025-07-22									
⋮	9	Results and Conclusions	2025-08-20									
⋮	10	Dissertation Document Writing	2025-09-01									