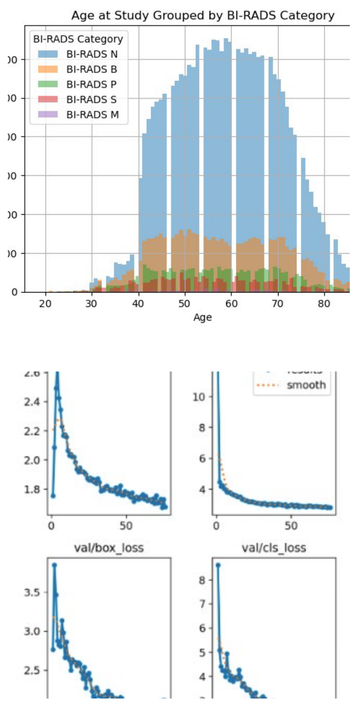
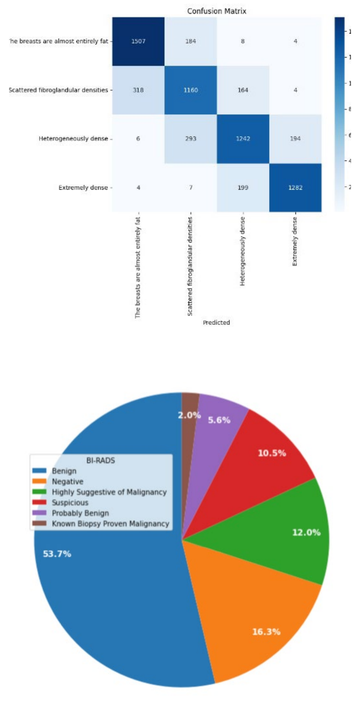
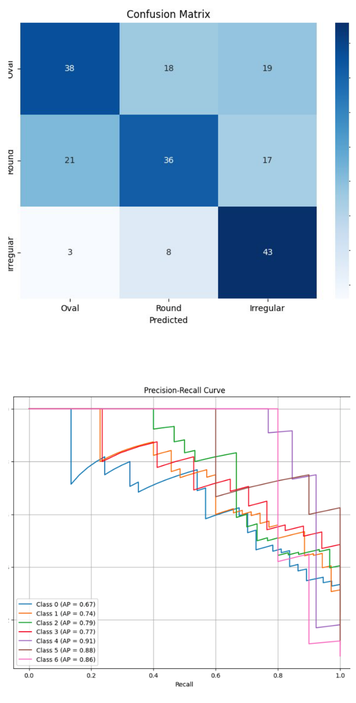
HSLU Hochschule Luzern

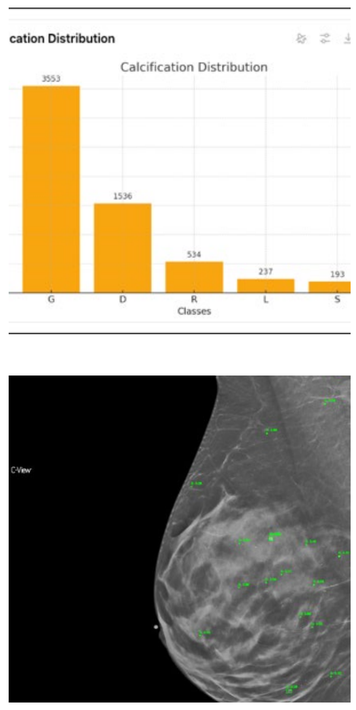
Technik & Architektur

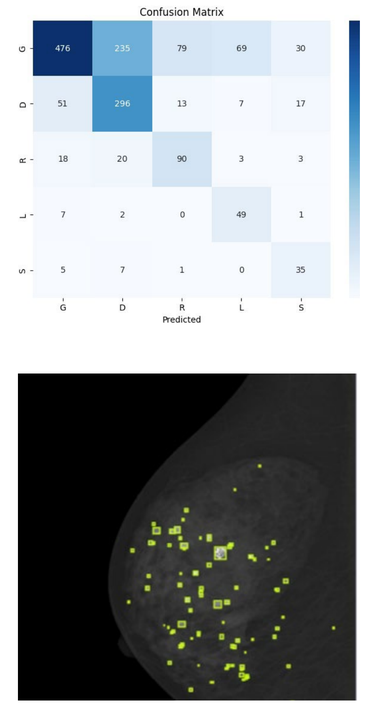
Pipeline for Mammography-Based Multi-Feature Classification and Automated Report Generation

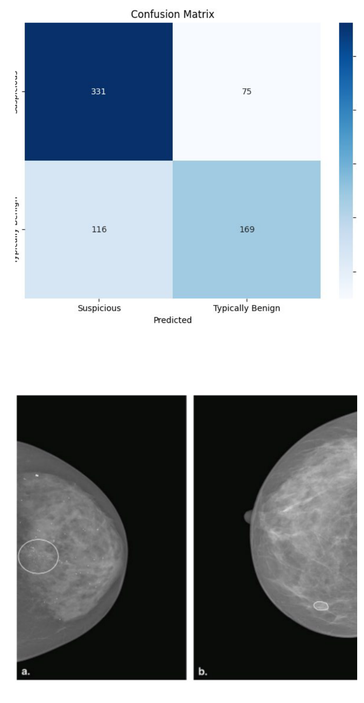


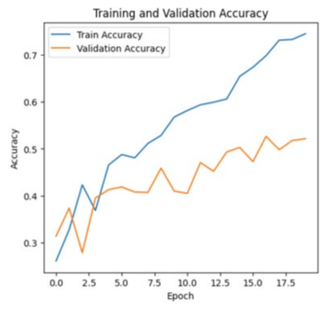


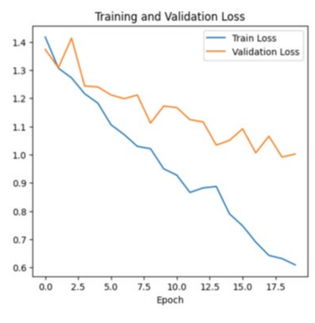


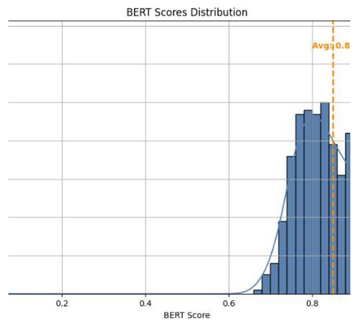


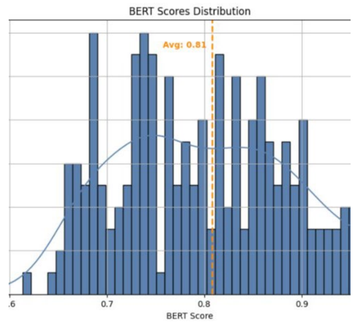


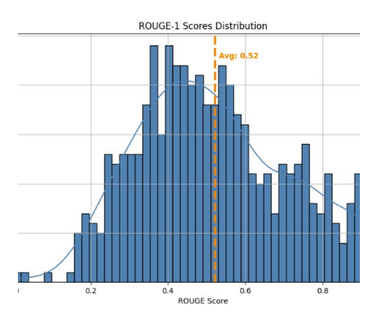


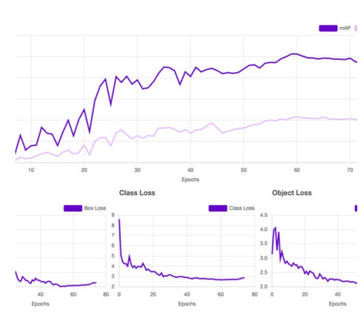


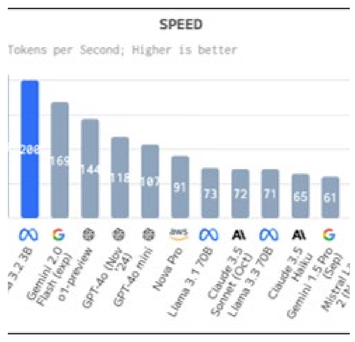


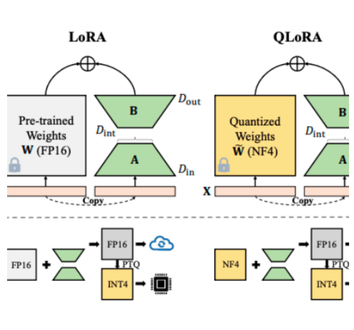


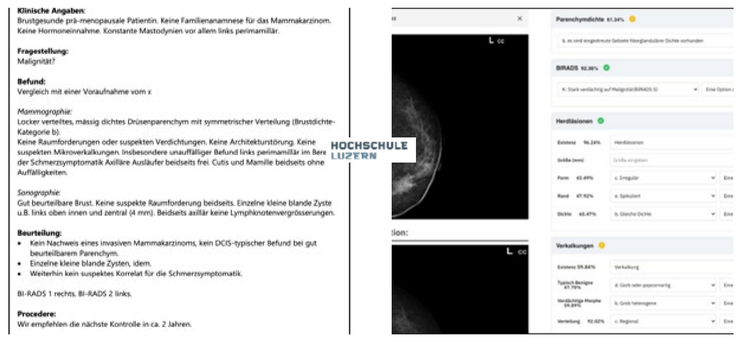


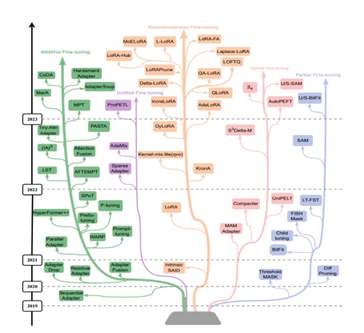












Problem Statement

Breast cancer diagnosis relies heavily on mammography, yet its interpretation is often subjective. Variability among radiologists can lead to inconsistent assessments, affecting patient outcomes. A standardized classification approach is needed to ensure accurate and reliable diagnosis. Additionally, automated reporting can help reduce human error and improve efficiency.

Current diagnostic processes lack uniformity, making it challenging to maintain consistency in evaluations. Misclassification of key mammographic features can result in delayed or incorrect treatments. Reliable report generation is essential to support clinical decision-making and streamline workflow. An objective, automated system could enhance diagnostic precision and provide structured, comprehensive reports.

Solution Concept

Deep learning enables a standardized and objective classification of **mass, breast composition, calcification, BI-RADS class, and architectural distortion** in mammographic images. By integrating an automated reporting system, diagnostic consistency can be improved while reducing human error. The proposed approach leverages a trained model to analyze key features and generate structured reports for clinical decision-making. This solution aims to enhance diagnostic accuracy, streamline workflow efficiency, and support radiologists in breast cancer detection.

Results

The developed deep learning model successfully classified **mass, breast composition, calcification, BI-RADS class, and architectural distortion** with high accuracy. Automated report generation provided structured and consistent diagnostic summaries, reducing variability among radiologists. The results demonstrated improved diagnostic precision and efficiency, supporting clinical decision-making in mammographic analysis

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