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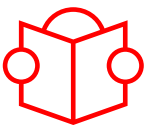Mohammed VI
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Research field
Machine Learning for Healthcare

PhD title
**Cost-Sensitive Learning for
Imbalanced Medical Data**

Keywords
- Class Imbalance,
- Cost-Sensitive
  Learning
- Machine Learning
- Medical Data
- Cancer Research

Summary
Medical datasets often display significant class imbalance, with some conditions having far fewer instances than others. This imbalance can cause machine learning models to be biased towards the majority classes, potentially leading to severe consequences in clinical decision-making. Our research focuses on cost-sensitive learning, which addresses this issue by considering the varying costs of misclassifying different conditions.

Instead of simply minimizing errors, these techniques seek to reduce the costs associated with misclassifications. This thesis develops and evaluates cost-sensitive methods specifically tailored for imbalanced medical data, with the goal of improving the predictive performance of models, particularly for rare but critical conditions. The primary focus is on cancers affecting women, aiming to address a major health concern and enhance gender-specific healthcare.

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