

Mobile App for Real-Time Skin Cancer Detection Using Machine Learning

By: Dr. Zahra Nematzadeh

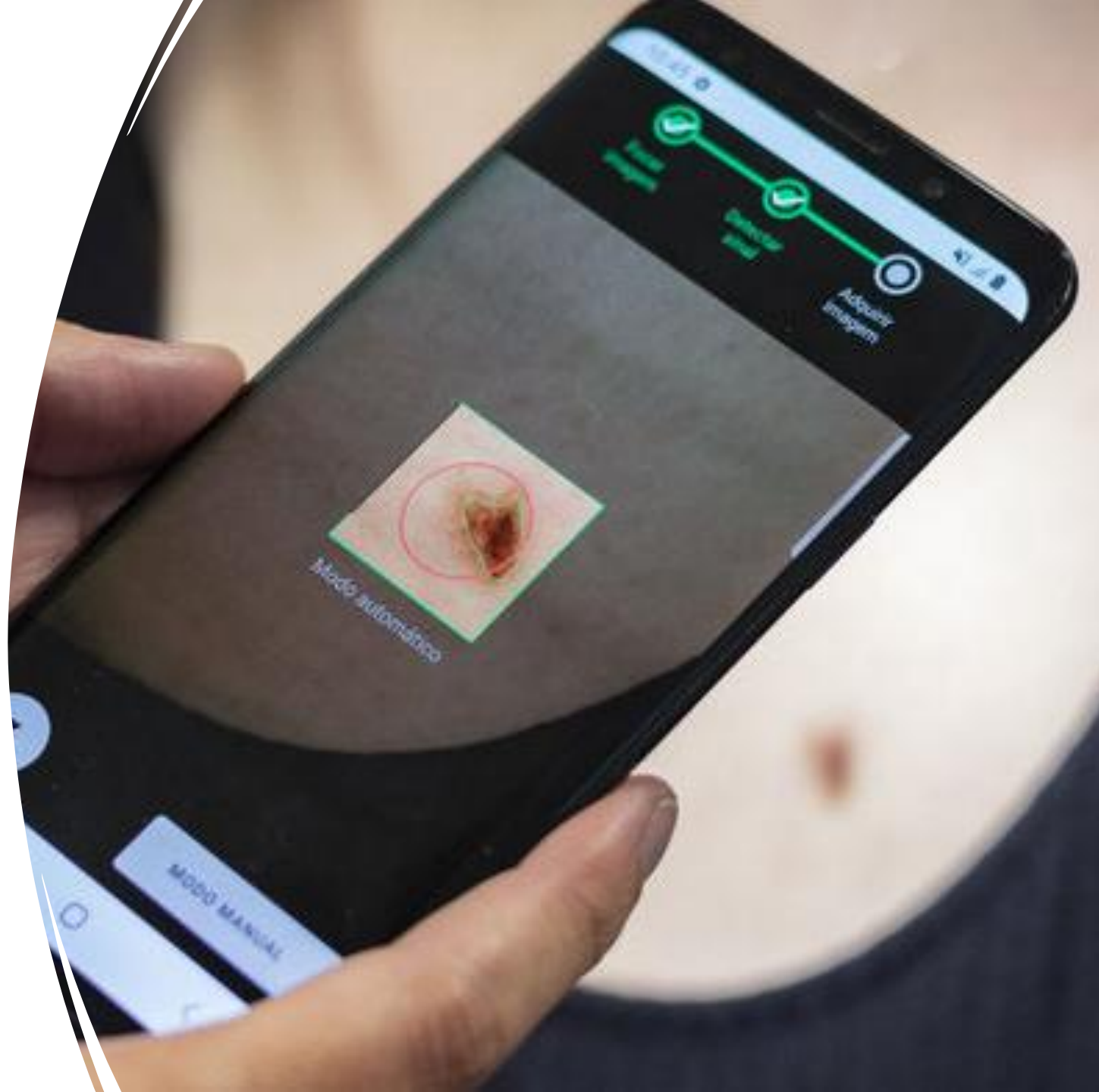
Motivation

- Skin cancer is one of the most common and deadly cancers worldwide.
- Early detection is crucial to improving survival rates.
- A mobile app that can analyze photos of skin lesions and provide preliminary cancer detection offers a convenient, accessible tool to raise awareness and encourage timely medical consultation.



What Will You Learn?

- **Develop a mobile app** that captures photos of skin lesions and predicts whether they are benign or malignant.
- **Machine Learning:** Train a machine learning model — for example, a Convolutional Neural Network (CNN) using transfer learning or another suitable algorithm — on the ISIC skin lesion image dataset.
- **Integration:** Integrate the ML model into the mobile app to provide real-time predictions on user photos.
- **Data Visualization:** Display the progression of a patient's condition over different days based on their skin lesion predictions.



Dataset

- **Skin Cancer MNIST - HAM10000 Dataset:**

<https://www.kaggle.com/kmader/skin-cancer-mnist-ham10000>

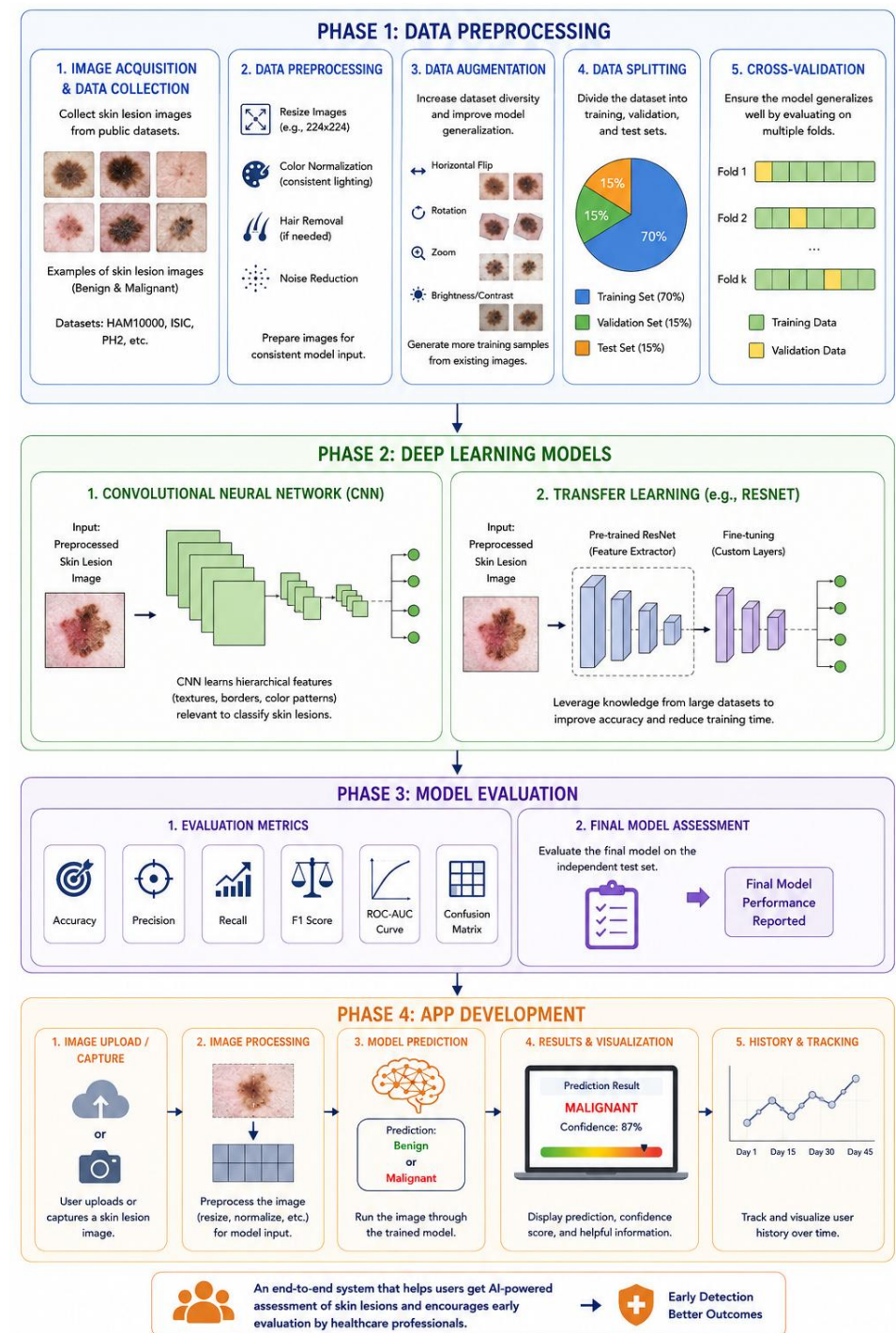
- The final dataset consists of 10015 dermatoscopic images which can serve as a training set for academic machine learning purposes.

- **Skin Cancer ISIC:**

<https://www.kaggle.com/nodoubttome/skin-cancer9-classesisic>

- This set consists of 2357 images of malignant and benign oncological diseases, which were formed from The International Skin Imaging Collaboration (ISIC).

Overall Framework



Deliverables

- **Planning and Design:**
 - Project plan and requirements documentation.
- **CNN Development:**
 - Trained CNN model and performance evaluation report.
- **Mobile App Development:**
 - Functional mobile application with integrated CNN model.
- **Testing and Refinement:**
 - Test reports and refined web app.
- **Final Presentation:**
 - Demo video showcasing the app's functionality.
 - Project poster summarizing objectives, methodology, and results.
 - Final project presentation.

Final Outputs

- By the end of this project, students will deliver a functional mobile app capable of capturing photos of skin lesions and providing real-time cancer risk predictions.
- The app will demonstrate the practical integration of machine learning into mobile software, empowering users to monitor skin health conveniently.



THANK YOU

