zant

October 4-5

TINY_HACK

Turin

The first Embedded AI Vision hackathon

Foc s AI

MelaNoMore

Name, Participant names

with the support of:

ARDUINO TOOLBOX Datapizza

1. A Global Threat

- Skin cancer is a worldwide epidemic
- One in three diagnosed cancers is skin cancer
- Early detection significantly improves treatment outcomes
- MelaNoMore helps identify skin tumors effectively

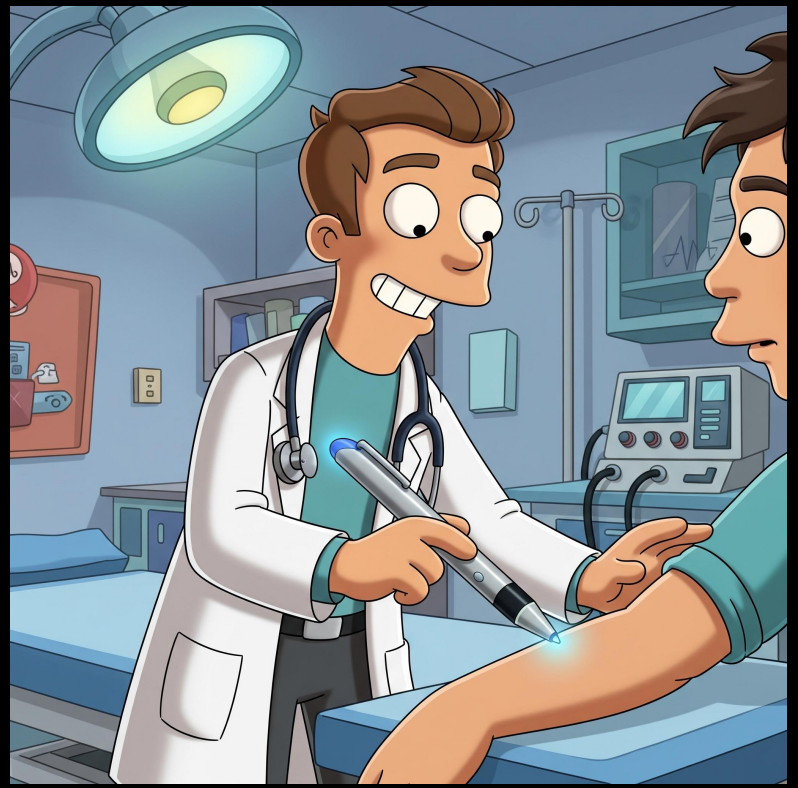
2. Project Overview

👀 Goal

Be a second set of eyes for doctors while recognizing skin tumors.

🎯 Use Case

Offers dermatologists an objective second opinion, particularly when fatigue might lead to oversights



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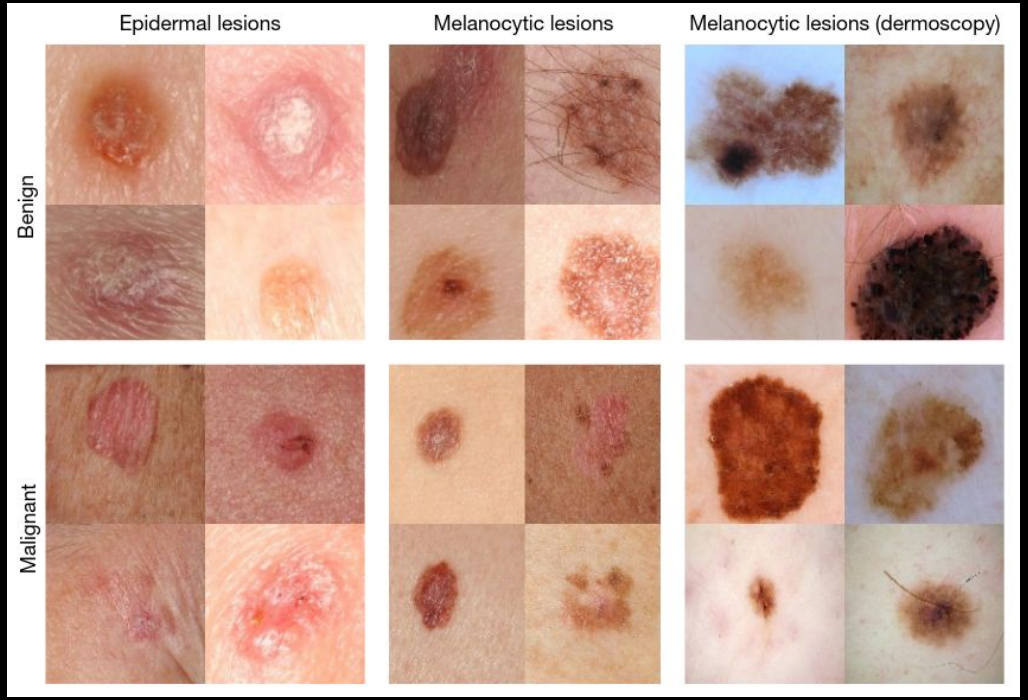
3. Dataset

- Large Dataset: > 8k images
- Well-Classified
- Pre-implemented Augmentation: Enhanced data diversity for improved model generalization.



4. Models

First tier

- Model: `fai-cls-n-coco` (Focoos AI)
- Task: Binary classification (suspicious vs. non-suspicious)
- Input: 96x96 RGB images
- Inference: Real-time, on-device

Second tier

- Model: Vision Transformer Large (ViT-L/16)
- Task: Multi-class classification across 7 lesion types
- Parameters: ~305M
- Inference: Triggered only for suspicious cases

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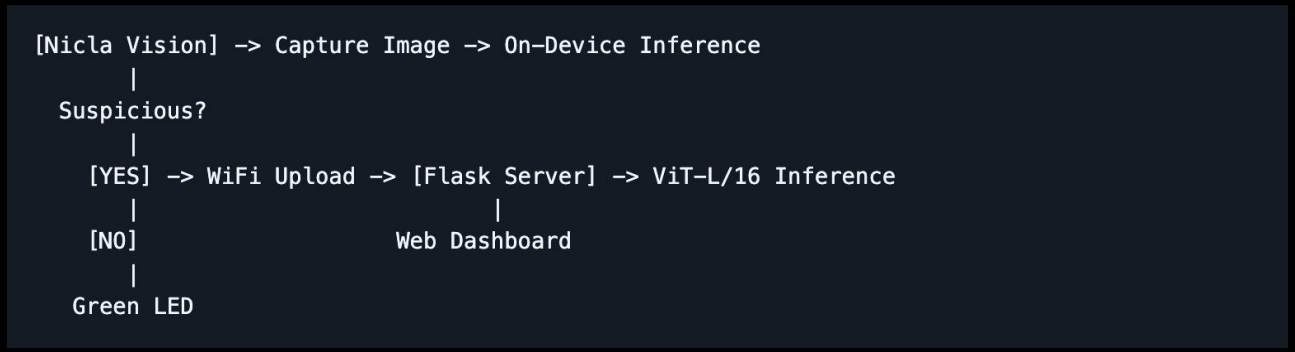
5. Deployment Pipeline



Edge Model (Nicla Vision) *Binary Classification*

Metric	Score
Accuracy	76%
Precision	67.99%
Recall	94.01%
F1-Score	76.44%

Server Model (ViT-L/16) *Multi-Class Classification*

Metric	Score
Accuracy	84.60%
F1 (Macro)	72.80%
F1 (Weighted)	83.40%

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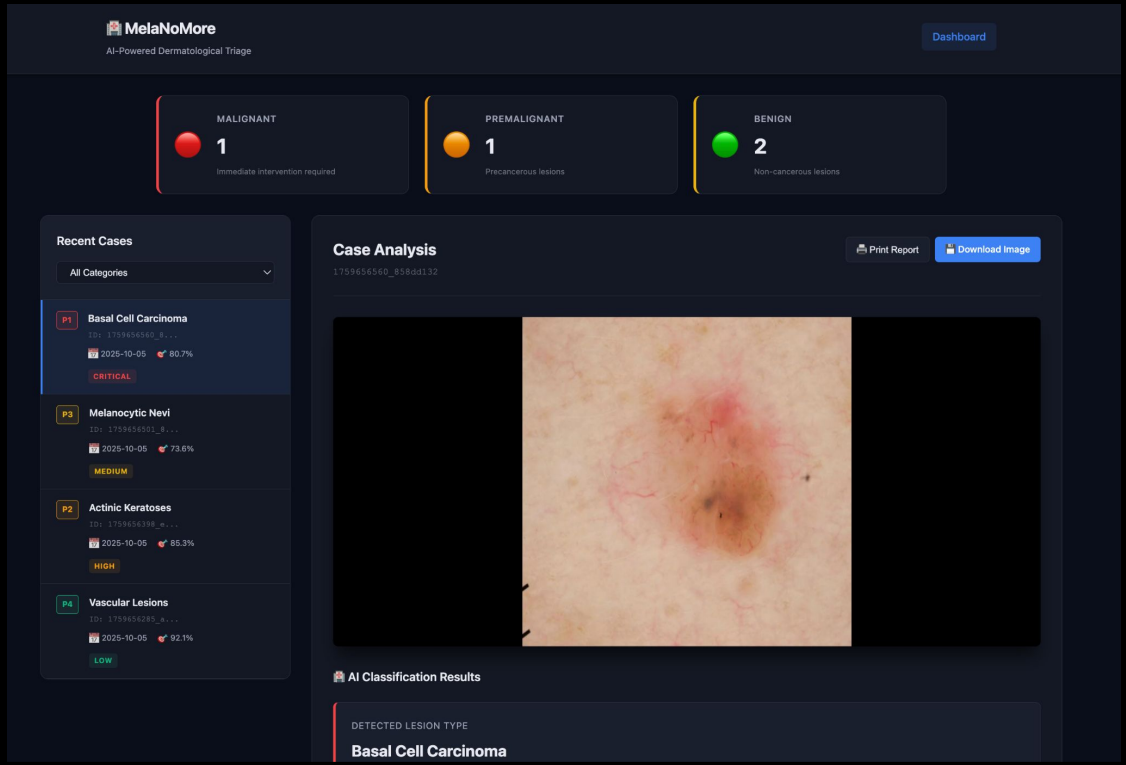
4. User Experience

Simple output easily readable by the dermatologist:

- GREEN/RED light on the MelaNoMore
- clear UI on the laptop



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5. Impact & Next Steps

🌟 Innovation & originality:

- 🔍 Reduce diagnostic errors
- 🩺 Improve early detection of dangerous skin cancers like melanoma
- ⏱️ Save time during patient consultations

🚀 Future potential:

- Mobile app integration for patient record management
- Database integration for longitudinal lesion tracking
- Multi-language support for global deployment
- Real-time analytics dashboard for dermatology clinics
- HIPAA-compliant encryption for patient data

That’s a wrap! 🌮

Thanks