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October 4-5

TINY_HACK

Turin

The first Embedded AI Vision hackathon

Focus AI

# ShroomCognition


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with the support of:

ARDUINO TOOLBOX Datapizza

# 1. Project Overview

👀 **Goal**: identify edible vs poisonous mushrooms to help foragers stay safe

🎯 **Use case in brief**: instant, reliable photo-based classification for safer foraging

# 2. Dataset & Model

## 📊 Dataset:

Kaggle Mushroom Dataset – 25 edible & 25 poisonous species.
Pre-split (80:20) with custom script for training/validation.

## 🧠 Model architecture:

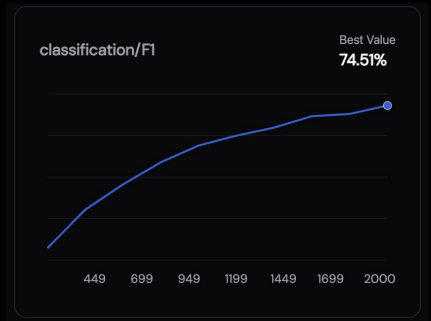
Lightweight CNN for image classification.
Balanced accuracy vs. efficiency for mobile use.

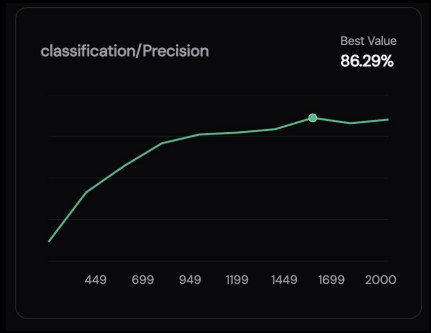
## ⚖️ Trade-offs:

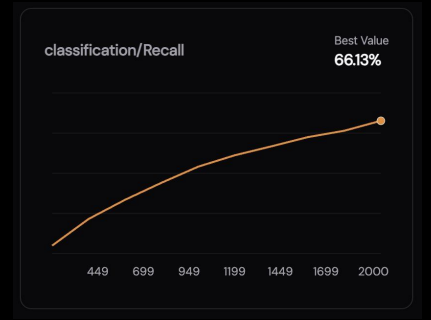
High precision → safer predictions in the field.

## 💡 Reasoning:

Runs on portable device – ideal for offline forest use.

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# 3. Deployment Pipeline

## 🔧 Pipeline steps

- A new scan request is triggered from the UI
- Nicla Vision captures an image and runs inference
- The device sends back the photo and the classification result

# 4. Demo & User Experience

A **React-based web app** runs locally on a smartphone connected directly to the **Nicla Vision**. It performs **on-device classification** via Arduino and works **entirely offline**.

1. Nicla Vision captures a photo of a mushroom 🍄
2. The model classifies it (Edible or Poisonous)
3. The image and classification are sent to the backend 🛰️
4. The frontend fetches and displays the latest results in real-time 📊

# 5. Impact & Next Steps

## 🌟 Innovation & originality:

Edge AI vision system for real-time mushroom classification – innovative, fast, and fully offline.

## 🚀 Future potential:

- Enable Bluetooth connectivity for seamless, wireless data transfer
- Expand the dataset to improve accuracy and robustness
- Extend the model to recognize other natural objects beyond mushrooms

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That’s a wrap! 🌮

Thanks