



INTERNATIONAL HACKATHON

## TITLE PAGE

»»»» PROBLEM STATEMENT - AI POWERED FOOD SAFTEY DETECTION

»»»» DOMAIN - AI/ML

»»»» TEAM NAME - ELITE\_BOYS

»»»» NAME OF COLLEGE / UNIVERSITY - MUMBAI  
UNIVERSITY



# IDEA TITLE



**PROPOSED SOLUTION (DESCRIBE YOUR IDEA/SOLUTION/PROTOTYPE)**

»»»» DETAILED EXPLANATION OF THE PROPOSED SOLUTION -

WE ARE USING ML MODEL FOR PREDICTING THE FOOD IMAGE WITH HELP OF IMAGE PROCESSING/OPEN-CV.BASED ON FOOD DETECTION THE ML MODEL WILL SHOW THE HEALTH CONTENTS AND IN RESULT IT WILL SUGGEST WHETHER THE FOOD IS HEALTHY OR NOT

»»»» HOW IT ADDRESSES THE PROBLEM -

WE ADDRESS THE PROBLEM STATEMENT BY DEVELOPING AN AI/ML-POWERED SYSTEM THAT DETECTS HARMFUL CHEMICALS, PRESERVATIVES, OR UNSAFE INGREDIENTS IN FOOD PRODUCTS. OUR SOLUTION USES COMPUTER VISION (OPENCV) TO SCAN FOOD ITEMS OR PACKAGING, AUTOMATICALLY IDENTIFYING THE FOOD TYPE AND INGREDIENTS. IT THEN ANALYZES THESE INGREDIENTS FOR SAFETY COMPLIANCE, ASSESSING POTENTIAL HEALTH RISKS OR DISEASES LINKED TO THEIR CONSUMPTION. BY PROVIDING REAL-TIME, ACCESSIBLE INSIGHTS, WE ENABLE CONSUMERS TO MAKE INFORMED DECISIONS ABOUT THEIR FOOD SAFETY

»»»» INNOVATION AND UNIQUENESS OF THE SOLUTION -

CURRENTLY THERE ARE MANY APPS WHICH ARE MADE FOR HEALTHY LIFESTYLE.THE APPS SUGGEST HEALTH CONTENT FROM DATABASE,BUT WITH ML MODEL WE CAN ENHANCE THE ACCURACY AND NO NEED FOR DATABASE



# TECHNICAL APPROACH

## TECHNOLOGIES TO BE USED (E.G. PROGRAMMING LANGUAGES, FRAMEWORKS, ETC.) -

### REACT FLASK PYTHON AND PANDAS

## METHODOLOGY AND PROCESS FOR IMPLEMENTATION (FLOW CHARTS/IMAGES/ WORKING PROTOTYPE) -

```
start_time=timer()
torch.manual_seed(42)
device = "cuda" if torch.cuda.is_available() else "cpu"
results=train(model=model.cuda(),
              train_dataloader=train_dataloader,
              test_dataloader=test_dataloader,
              optimizer=optimizer,
              loss_fn=loss_fn,
              epochs=20,
              device=device)

end_time=timer()
print(f'[INFO]Total training time= {end_time-start_time:.3f} seconds')

Could not render content for 'application/vnd.jupyter.widget-view+json'
{'model_id': '4f970dcff5ec480e981c7dbec7919438', 'version_major': 2, 'version_minor': 0}

Epoch:0| train_loss:0.8443|train_acc:0.7666|test_loss:0.8461|test_acc:0.7614
Epoch:1| train_loss:0.8191|train_acc:0.7595|test_loss:0.7655|test_acc:0.7803
Epoch:2| train_loss:0.7522|train_acc:0.7757|test_loss:0.7637|test_acc:0.7811
Epoch:3| train_loss:0.7169|train_acc:0.7851|test_loss:0.7498|test_acc:0.7759
Epoch:4| train_loss:0.6841|train_acc:0.7903|test_loss:0.7259|test_acc:0.7877
[INFO]Total training time= 1364.983 seconds
```

pred\_and\_plot\_image(  
 model=model,  
 image\_path="./Test\_cases/31.jpg",  
 class\_names=class\_names,  
 transform=auto\_transforms,  
 device=device  
)

Pred: jalebi | Prob: 0.999

Upload Image

Choose File Screenshot 2024-10-12 135914.png

Uploaded Image

Recognized Food: Donut

Confidence: 0.241

Nutritional Information:

- Carbs: 22 grams
- Fats: 12 grams
- Proteins: 2 grams



# IMPACT AND BENEFITS



## POTENTIAL IMPACT ON THE TARGET AUDIENCE -

THE POTENTIAL IMPACT ON THE TARGET AUDIENCE INCLUDES IMPROVED FOOD SAFETY AWARENESS, LEADING TO HEALTHIER EATING HABITS AND REDUCED HEALTH RISKS FROM HARMFUL INGREDIENTS.

CONSUMERS WILL GAIN CONFIDENCE IN THEIR FOOD CHOICES, AVOIDING UNSAFE PRODUCTS AND MINIMIZING MEDICAL EXPENSES. ADDITIONALLY, IT EMPOWERS THEM WITH REAL-TIME INFORMATION, FOSTERING A MORE INFORMED AND HEALTH-CONSCIOUS COMMUNITY.



## BENEFITS OF THE SOLUTION (SOCIAL, ECONOMIC, ENVIRONMENTAL, ETC.) -

OUR SOLUTION IMPROVES PUBLIC HEALTH BY REDUCING RISKS OF FOODBORNE DISEASES AND HARMFUL INGREDIENTS. ECONOMICALLY, IT HELPS CONSUMERS MAKE SAFER FOOD CHOICES, REDUCING MEDICAL COSTS AND ENHANCING TRUST IN FOOD PRODUCTS. ENVIRONMENTALLY, IT PROMOTES AWARENESS OF HARMFUL SUBSTANCES, ENCOURAGING SUSTAINABLE AND SAFER FOOD PRODUCTION PRACTICES.



## USER SELLING POINTS / NOVELTY



OUR AI-POWERED SYSTEM UNIQUELY COMBINES FOOD QUALITY DETECTION, INGREDIENT ANALYSIS, AND DISEASE PREDICTION IN ONE PLATFORM. WITH OPENCV-BASED IMAGE SCANNING, USERS CAN EASILY IDENTIFY UNSAFE INGREDIENTS IN REAL-TIME. BY LEVERAGING AI TO ASSESS HEALTH RISKS BASED ON INGREDIENT CONSUMPTION LEVELS, THE SYSTEM OFFERS A PROACTIVE APPROACH TO FOOD SAFETY. ADDITIONAL FEATURES LIKE .