INNOVAZIONE PER LO SVILUPPO

# IMPROVING POULTRY HEALTH WITH DEEP LEARNING

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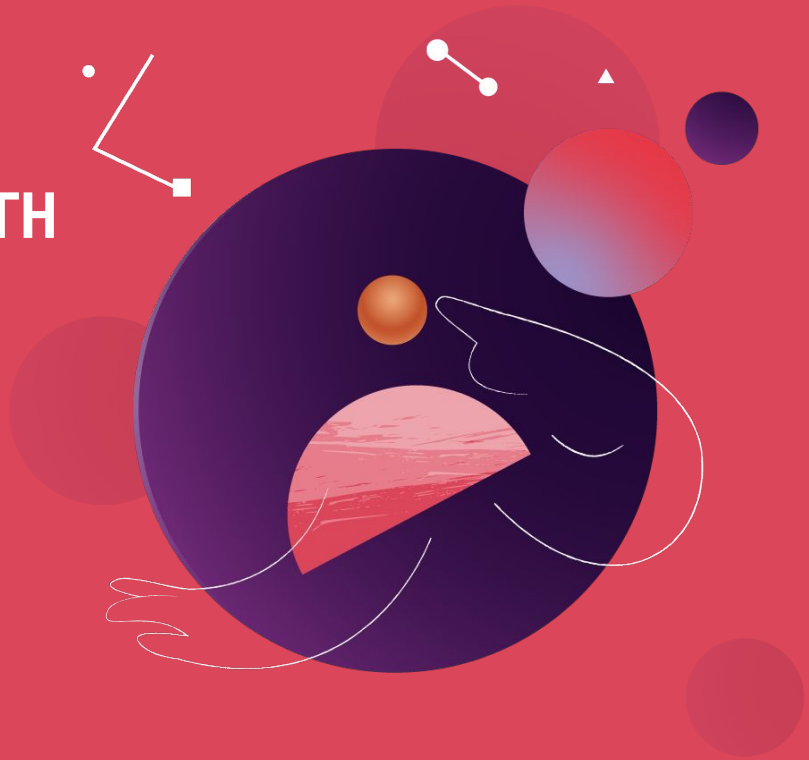
15-06-2021 // h. 11:00



# Poultry health matters

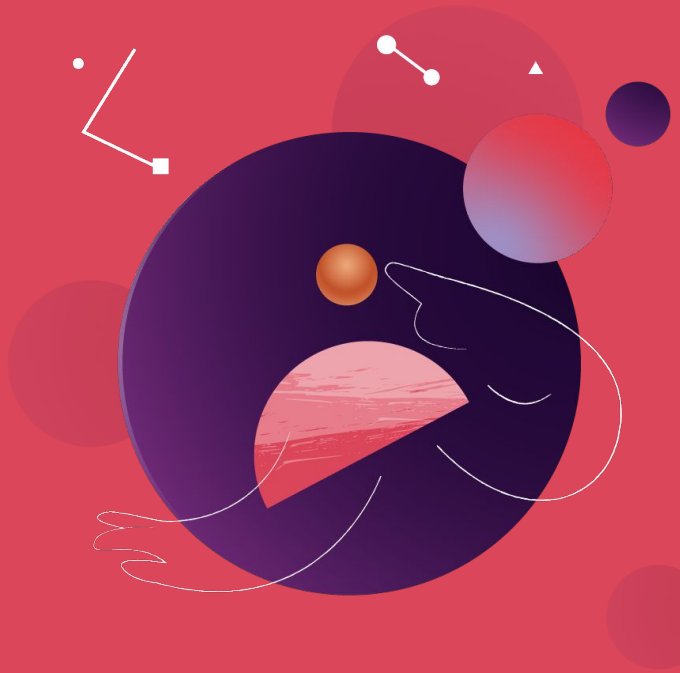
## TANZANIA

- Low poultry productivity from diseases
- Lack of trusted poultry data
- Chickens: 36 mil
- Households with chickens: 4.6 mil
- Population: 56.32 mil (2018)

# Diseases Monitoring

Salmonella, Newcastle and Coccidiosis chicken diseases:

- Diagnosed by lab procedures using droppings samples
- It takes 3 -4 days to get results
- Clinical signs
- Access to the services by farmers is expensive and limited



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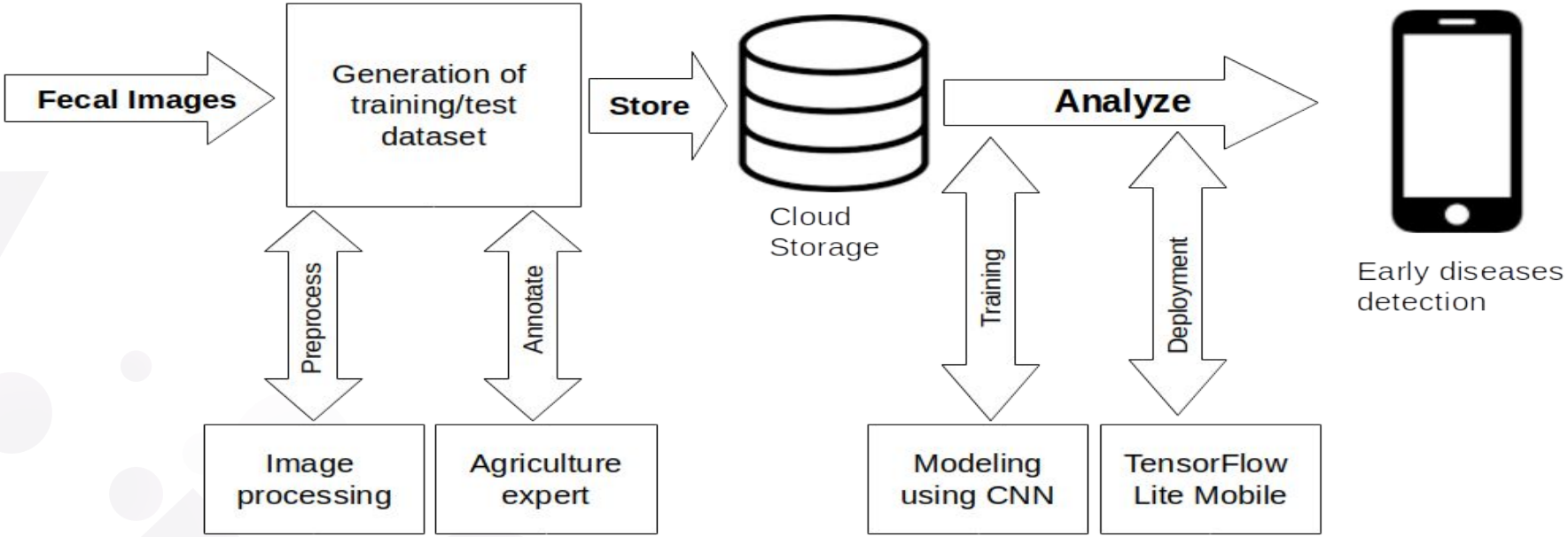
# Convolutional Neural Networks (CNNs) for poultry diseases diagnostics

# Task:

Can we train a model that can correctly classify a set of images for chicken diseases?

After training, our model should return the correct label for each image.

# Workflow


Fecal Images
Generation of training/test dataset
Store
Cloud Storage
Analyze
Early diseases detection
Preprocess
Annotate
Training
Deployment
Image processing
Agriculture expert
Modeling using CNN
TensorFlow Lite Mobile

# Step 1: Image data collection at farms

# Step 2: Dataset Chicken Droppings Images

| Class | # Images |
|---|---|
| Healthy | 2,057 |
| Coccidiosis | 2,103 |
| Salmonella | 2,276 |
| Newcastle | 376 |
| **TOTAL** | **6,812** |

Salmonella

Coccidiosis

Healthy

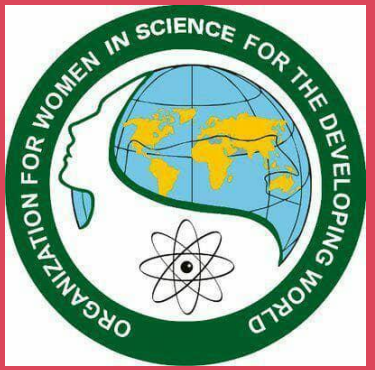
Newcastle

# Step 3: Model training and deployment

- Model training
  - CNN Baseline : 92% accuracy
  - VGG16: 88% accuracy
- The model will be deployed on Android mobile application
  - Access will be Free
- Model will be served on the mobile app
  - To allow usage offline
  - Model updates will be online

"It always seems impossible until it's done."

– Nelson Mandela


ORGANIZATION FOR WOMEN IN SCIENCE FOR THE DEVELOPING WORLD

# THANK YOU