FLOOD DETECTION

SUPERVISED BY: DR. SANDRA WAHEED
ENG: AMR ABDELBAKY

TEAM MEMBERS:

AHMED WALEED

GASER ASHRAF

MOHAMED SALAMA

YOUSEF MOSTAFA

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CLASSICAL APPROACH

PREPROCESSING

- IMAGES RESIZING
- CONTRAST ENHANCEMENT

FEATURES EXTRACTION

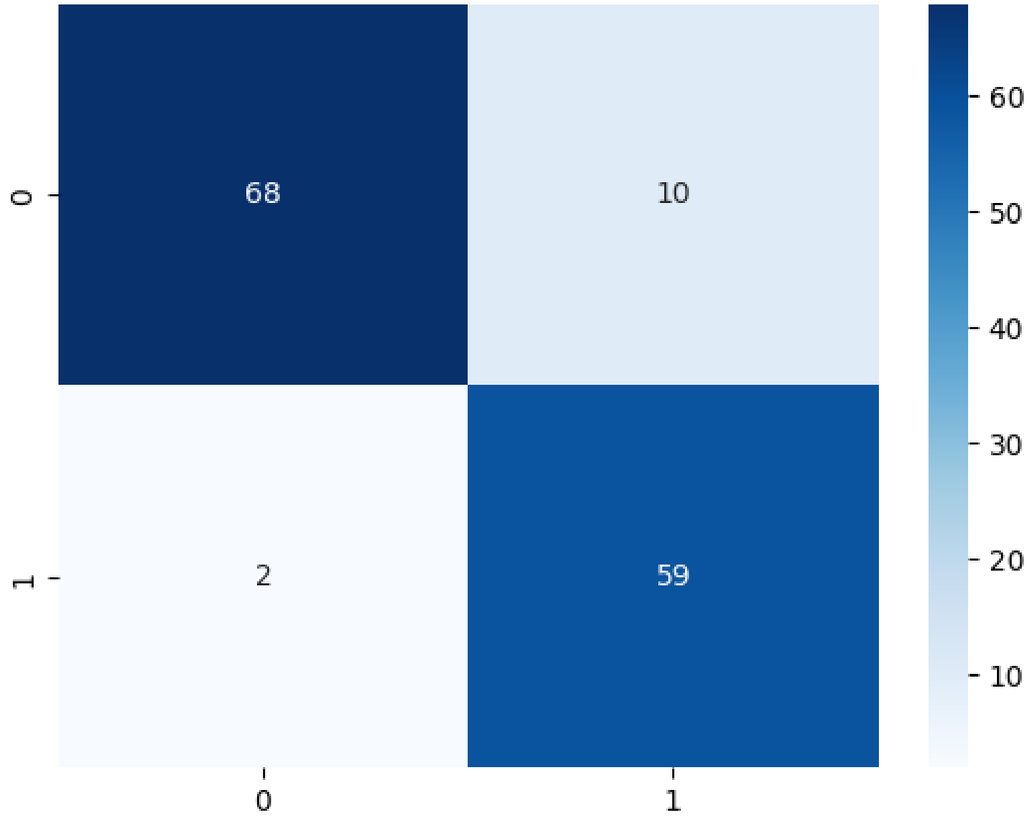
1. Modified Normalized Difference Water Index (MNDWI)
2. Gray-Level Co-occurrence Matrix (GLCM)
3. Color Histogram
4. Local Binary Pattern (LBP)

MODEL TRAINING

Model	Parameters
Random Forest	n_estimators=80, max_depth=8, random_state=42
AdaBoost	n_estimators=100 ,learning_rate=0.2 , random_state=42
Naive Bayes	Default
XGBoost	max_depth=15 , n_estimators=150 , learning_rate=0.2, random_state=42

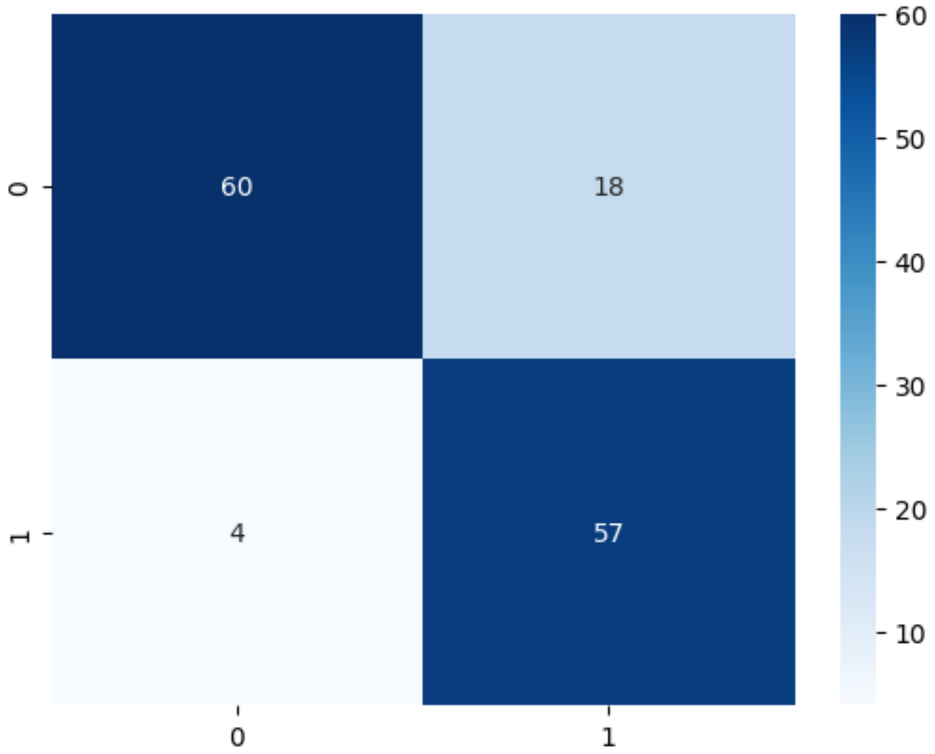
MODEL EVALUATION

1. RANDOM FOREST
   ACCURACY: 91.37%
   F1-SCORE: 0.91331



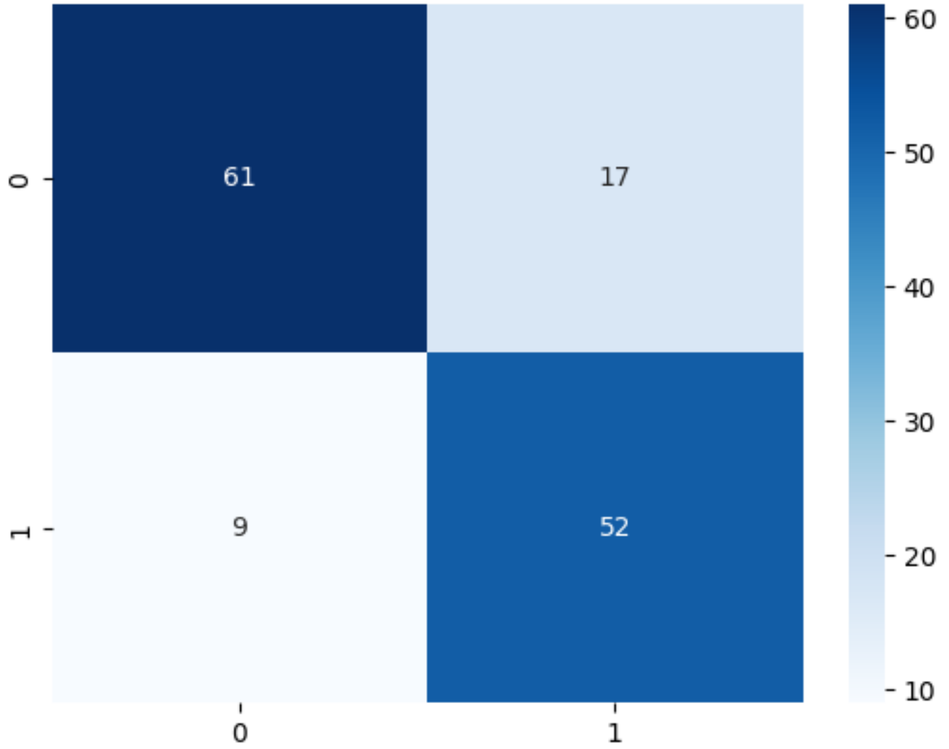
MODEL EVALUATION

2. ADABOOST:
   ACCURACY: 84.2%
   F1-SCORE: 0.842



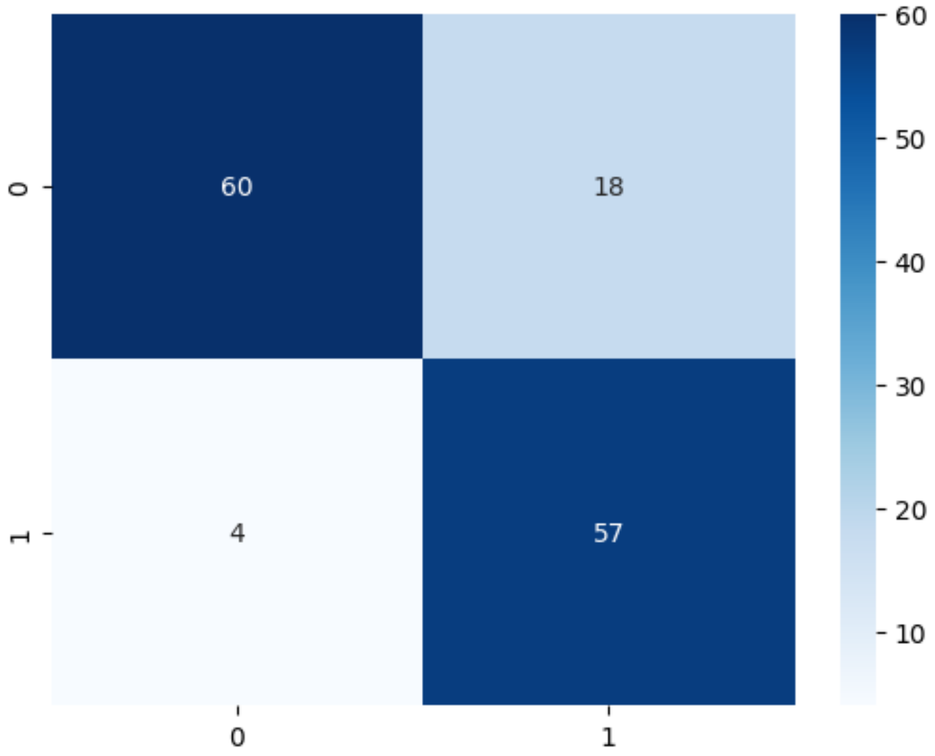
MODEL EVALUATION

3. NAIVE BAYES:
   ACCURACY: 81.3%
   F1-SCORE: 0.8122



MODEL EVALUATION

4. XGBOOST:
   ACCURACY: 90.56%
   F1-SCORE: 0.9063



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DEEP LEARNING APPROACH

PREPROCESSING

- Resize images
- Zero-Centering
- Data Augmentation

FEATURES EXTRACTION

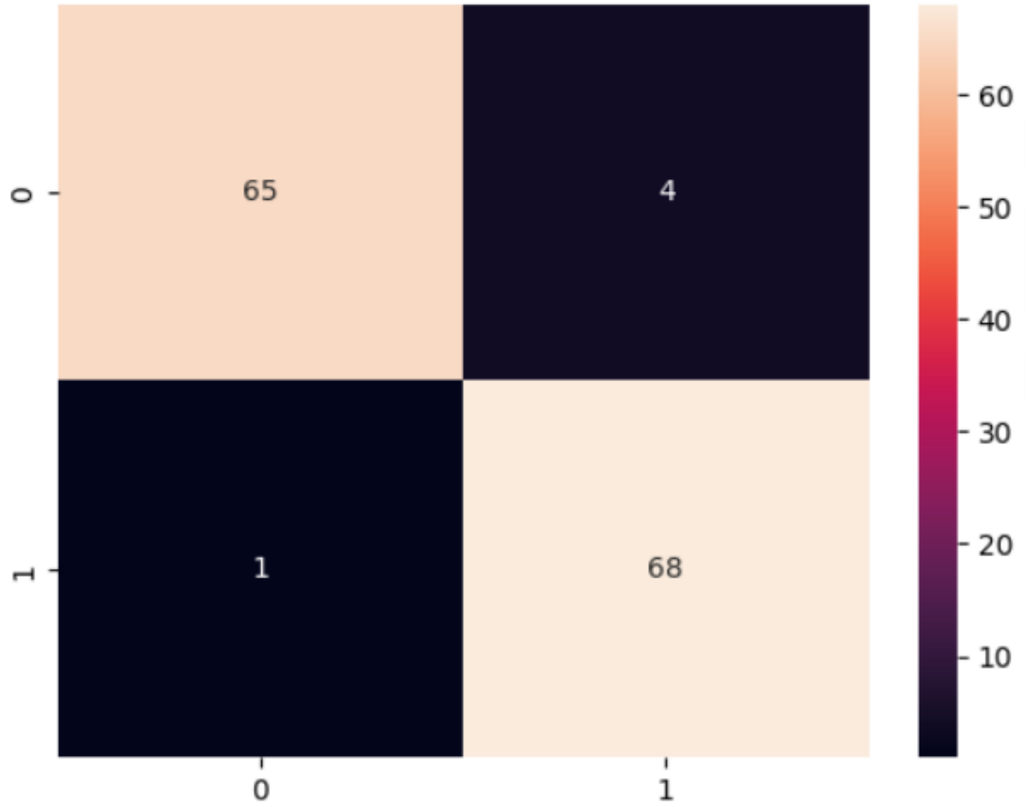
- Images are features flattened to a vector of size W*H*3.

MODEL EVALUATION

CNN:

Accuracy: 83%

F1-score: 0.82



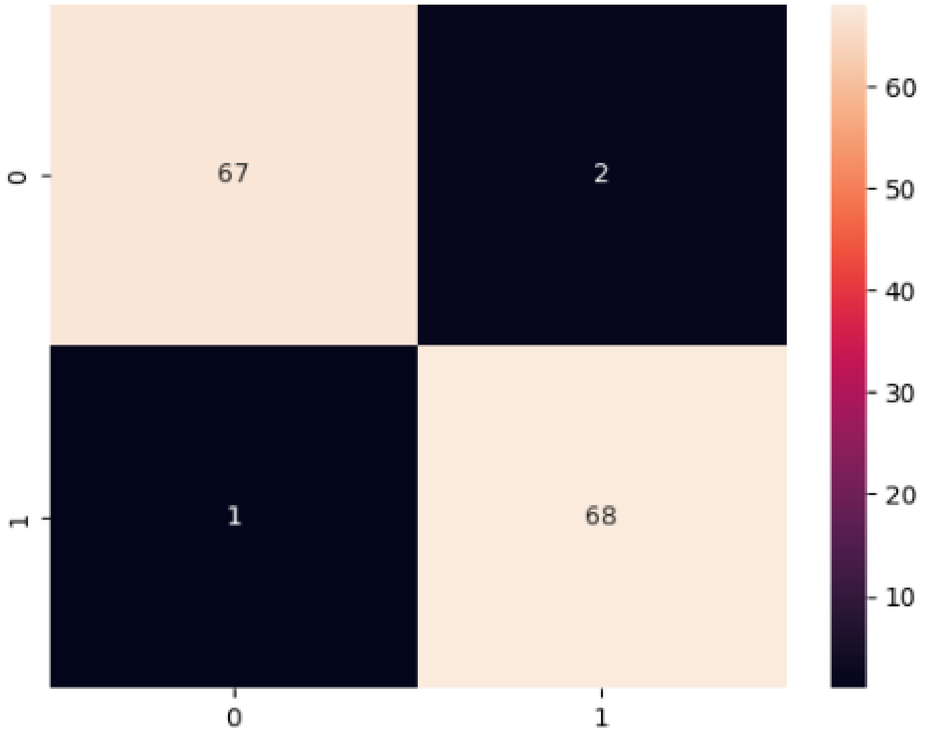
0=flood , 1 = non-flood

MODEL EVALUATION

ResNet:

Accuracy: 98%

F1-score: 0.98



0=flood , 1 = non-flood

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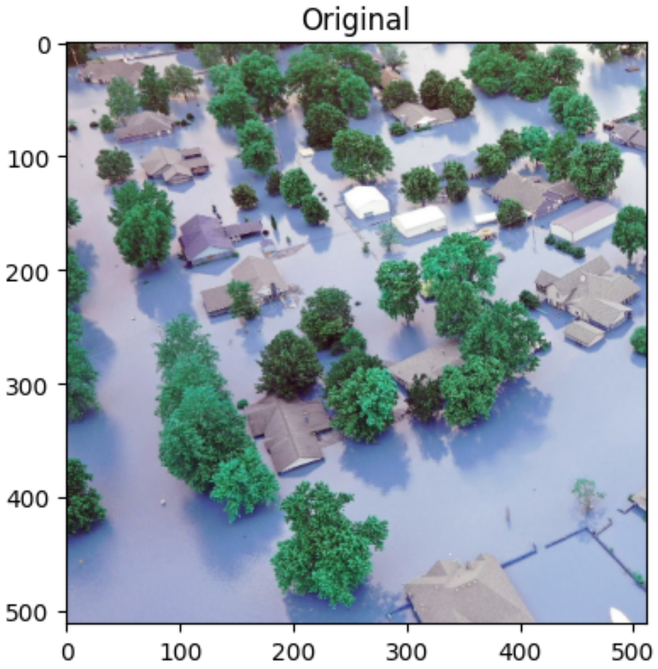
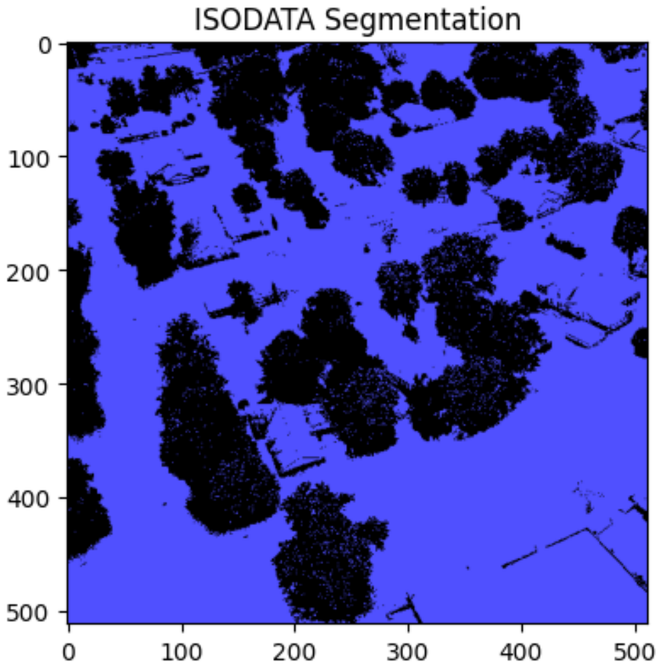
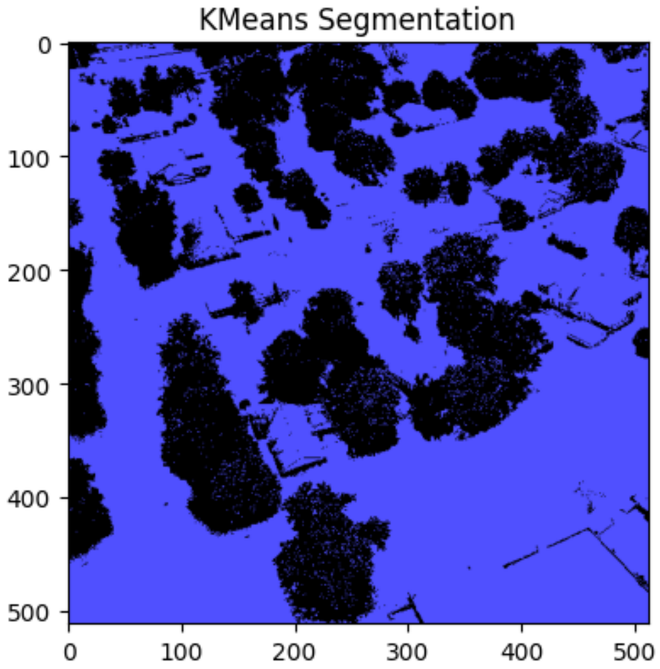
SEGMENTATION

SEGMENTATION

- ISODATA
- KMEANS







THANK YOU