"Face Emotion Recognition Using Machine Learning"

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Data Collection

- Data Source: Public datasets like FER-2013
- Data Collected: Images of faces labeled with emotions such as happy, sad, angry, etc.
- Total Data: Mention dataset size (e.g., ~35,000 images in FER-2013).

Data Preparation and Correlation

Content:

STEPS TO PREPARE DATA

- Data Cleaning (removing corrupt/invalid images).
- Image Resizing (e.g., 48x48 grayscale).
- Data Augmentation (rotation, flipping).

RELATIONSHIP IN DATA:

- Emotion labels correlate with image pixel intensity patterns.

Algorithm and Formula

- Algorithm: Convolutional Neural Network (CNN)
- Formula: Cross-Entropy Loss for classification:

$$L = -\frac{1}{N}\sum_{i=1}^{N}\sum_{j=1}^{C} y_{ij}\log(\hat{y}_{ij})$$

where yij is the actual label, and y^ij is the predicted probability.

Workflow

- Import Libraries and Dataset
- Data Preprocessing (resize, normalize)
- Build CNN Model
- Train and Validate Model
- Test on Real-Time Video Feed

Results

- Model Accuracy: Example ~85% on test data
- Demonstrate real-time detection (video screenshots).
- Graph: Accuracy vs. Epochs

Conclusion

- Effective use of CNN for emotion recognition.
- Real-world applications like healthcare, marketing, and security.

Thank You