

# FACIAL RECOGNITION

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Machine Learning 1  
DATS 6202

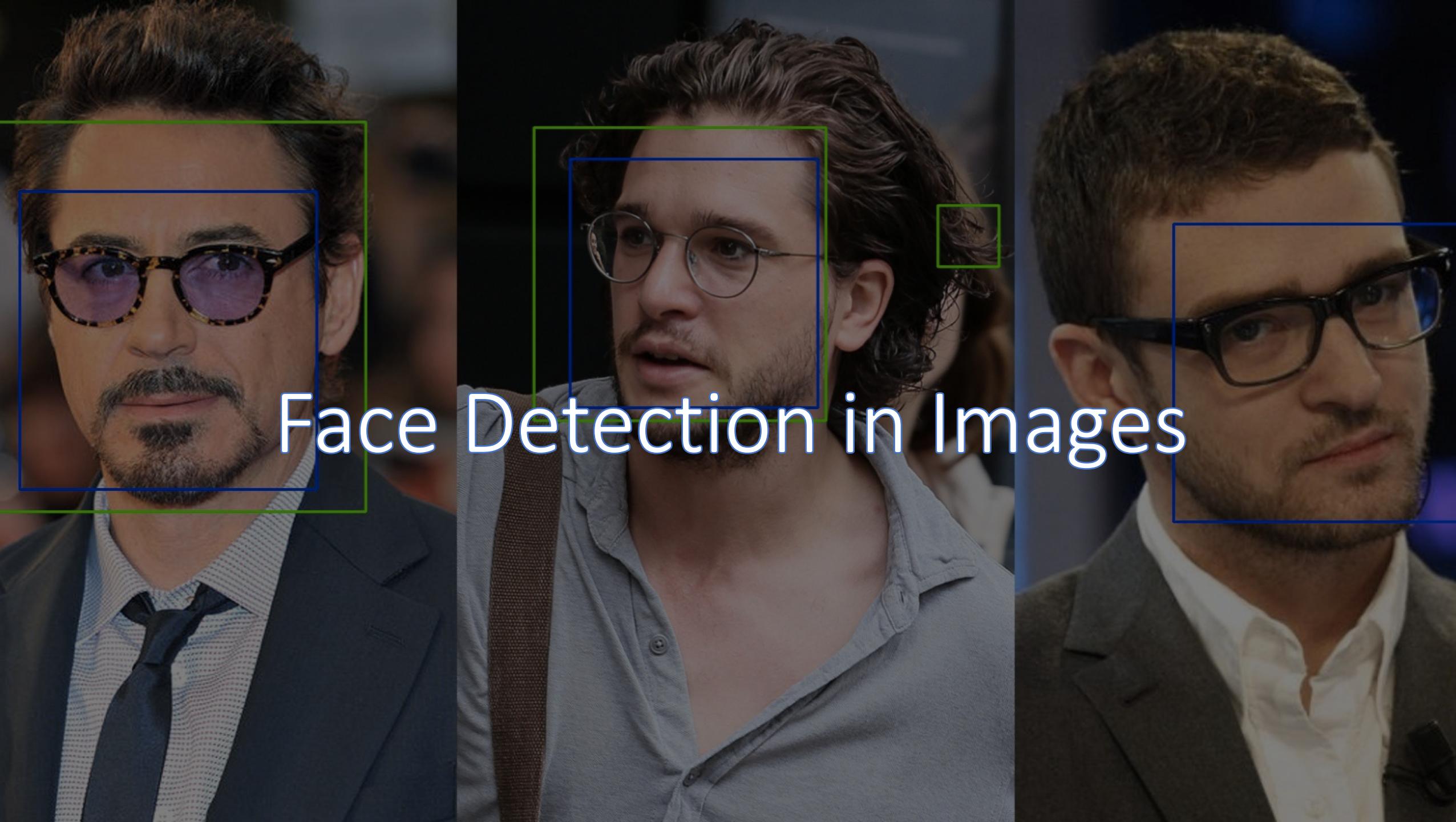
# Our Plan and Execution

- **Proposal**
- **Started to research about facial recognition**
- **Face detection in images**
- **Face detection in live feed**
- **Haar Cascades**
- **Increase Accuracy**
- **HOG Algorithm**
- **Instagram Web Scraping**
- **Dash and Plotly User Interface**
- **Capture and Retrain Features**

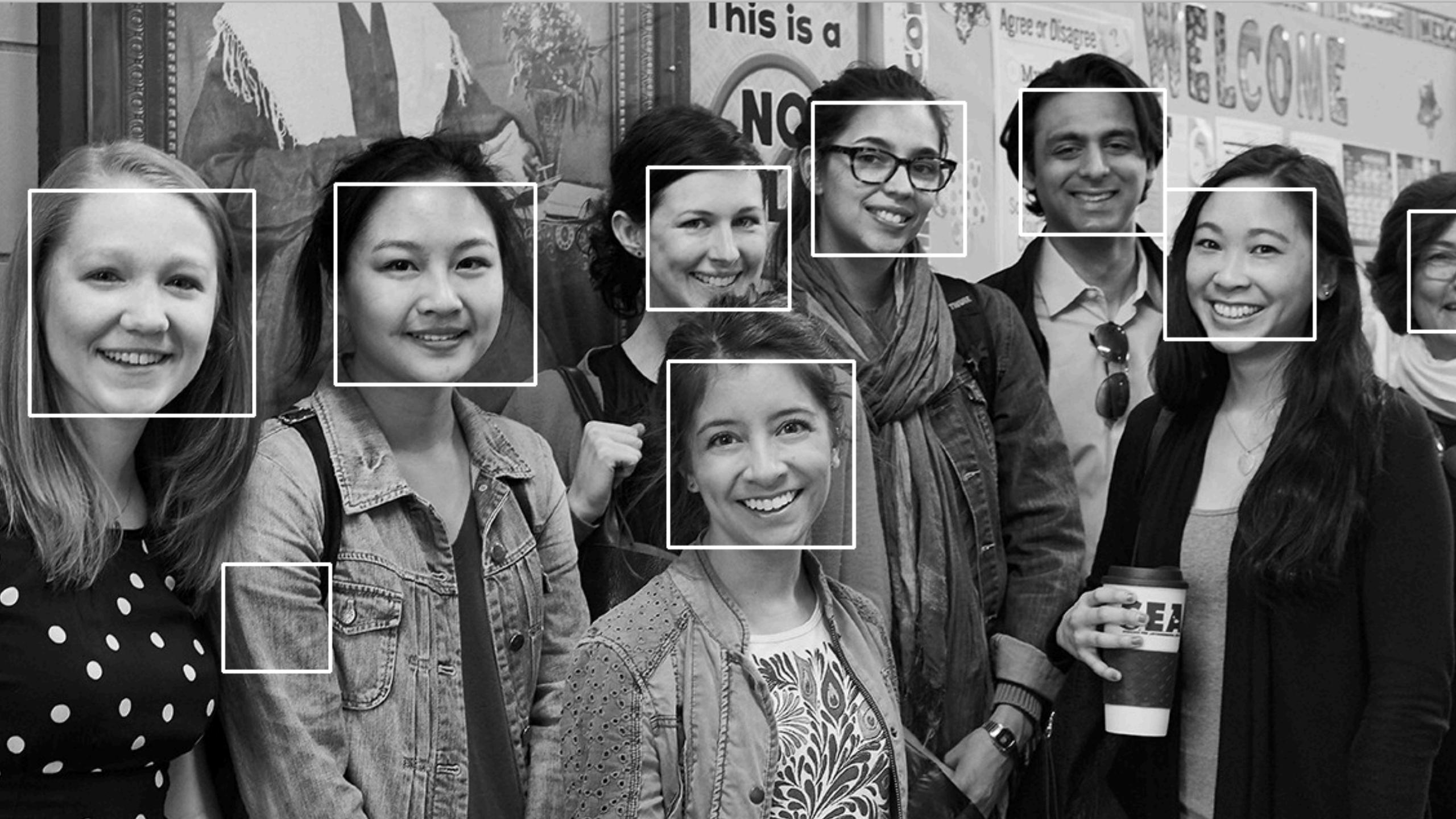
# Researching

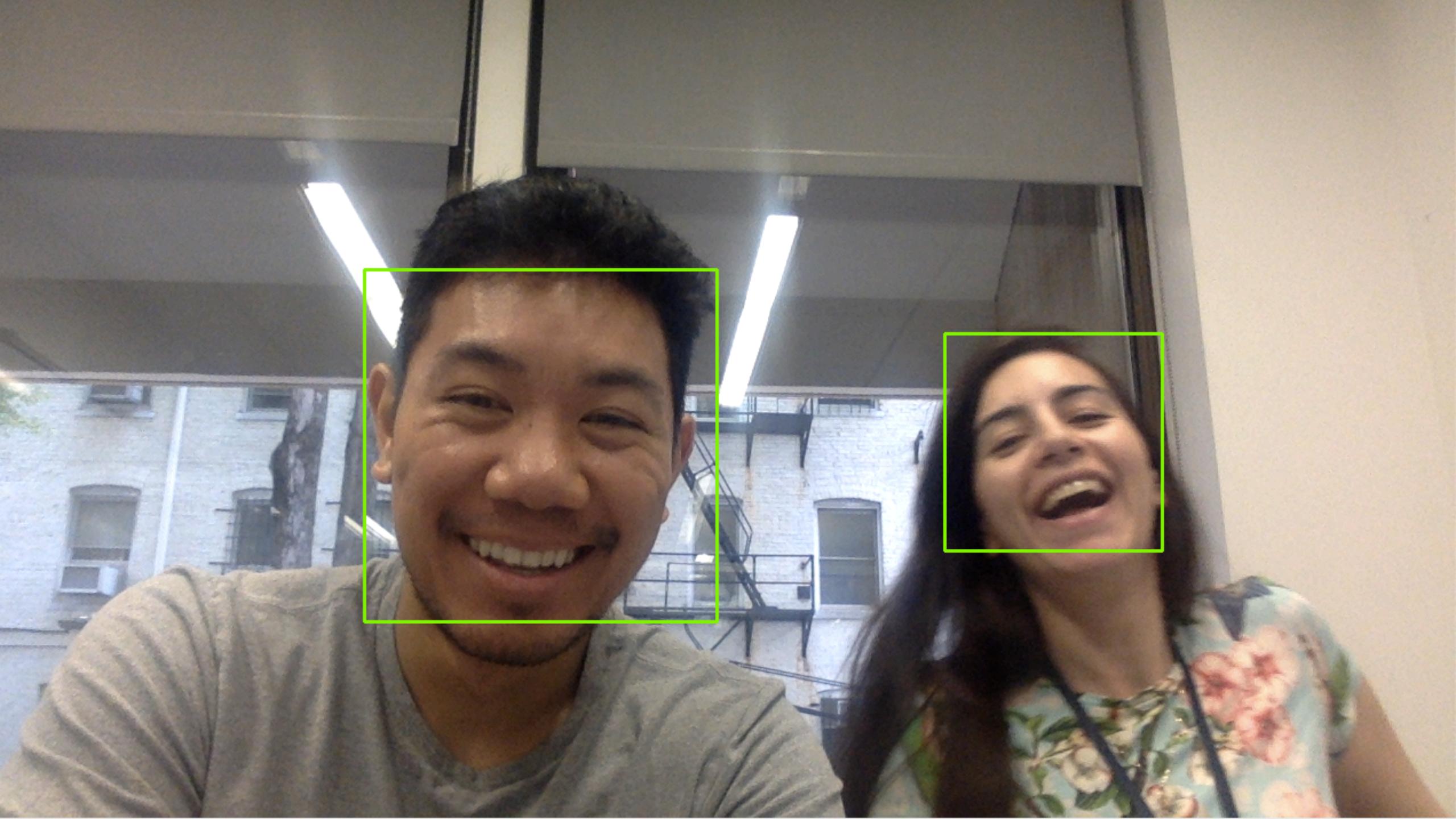
- Packages
- Algorithms
- Face Detection





# Face Detection in Images

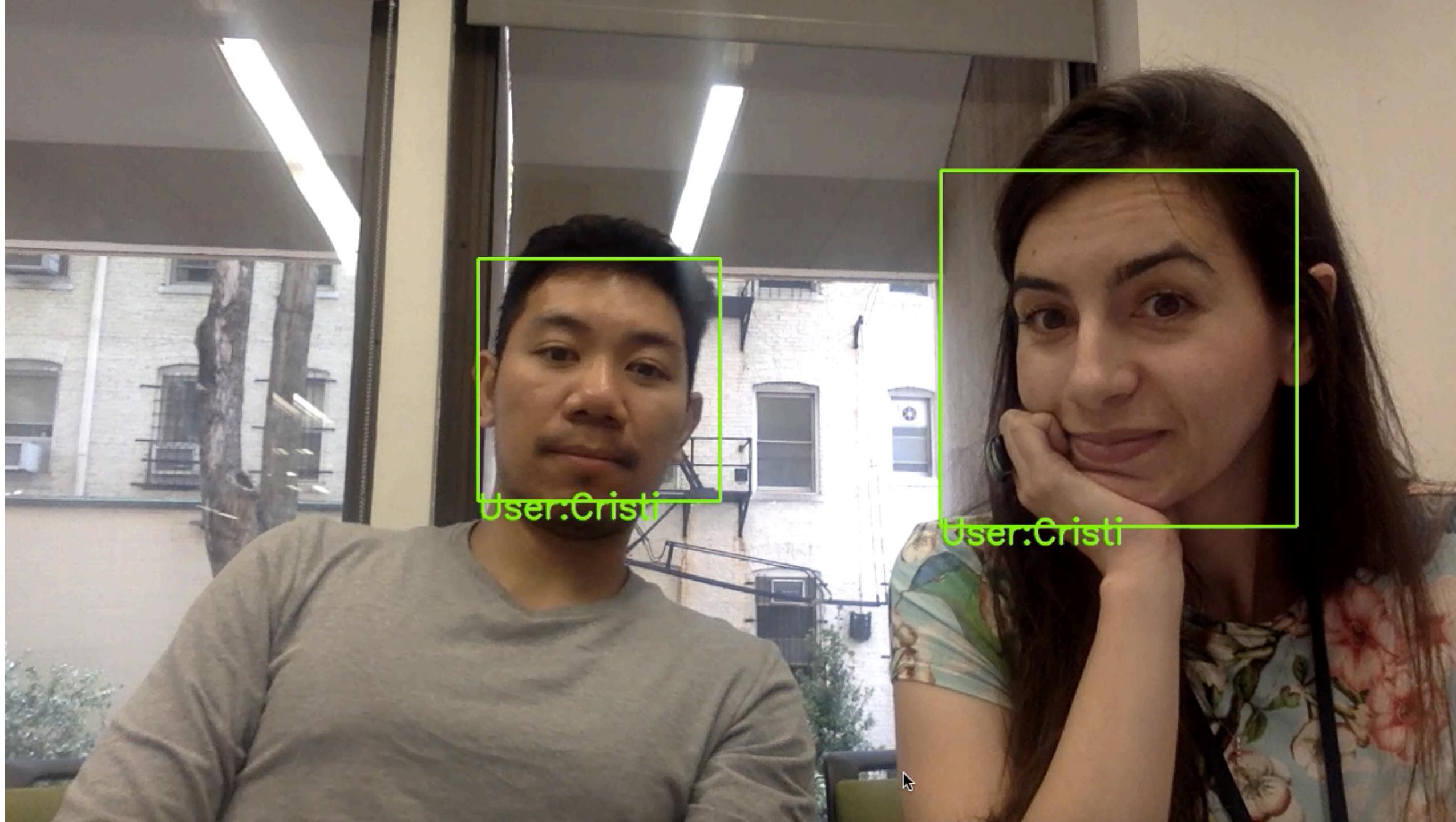




# Haar Cascades

- First live face detection
- Moved on to Recognition
- More Problems with accuracy
- Gradients

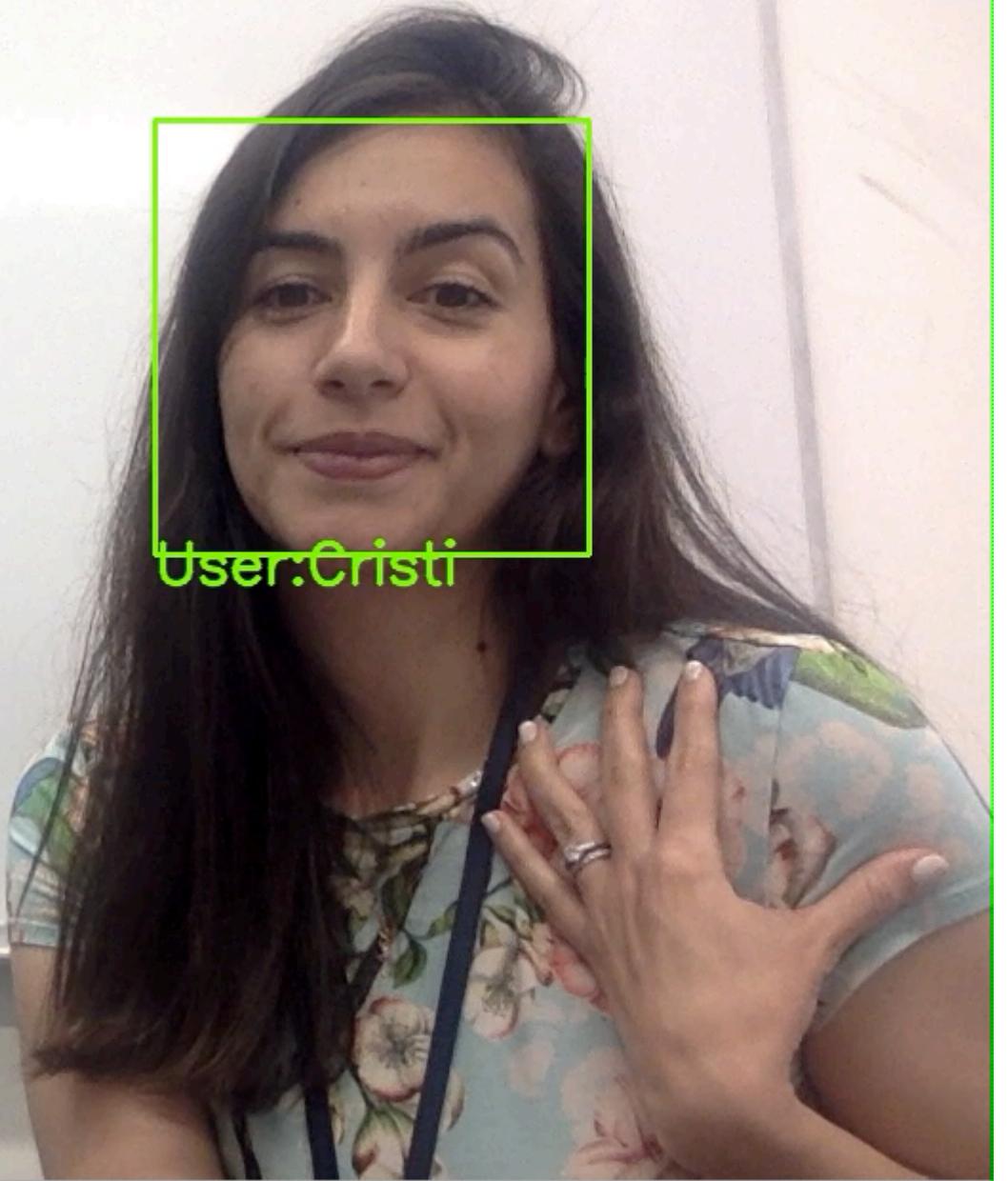
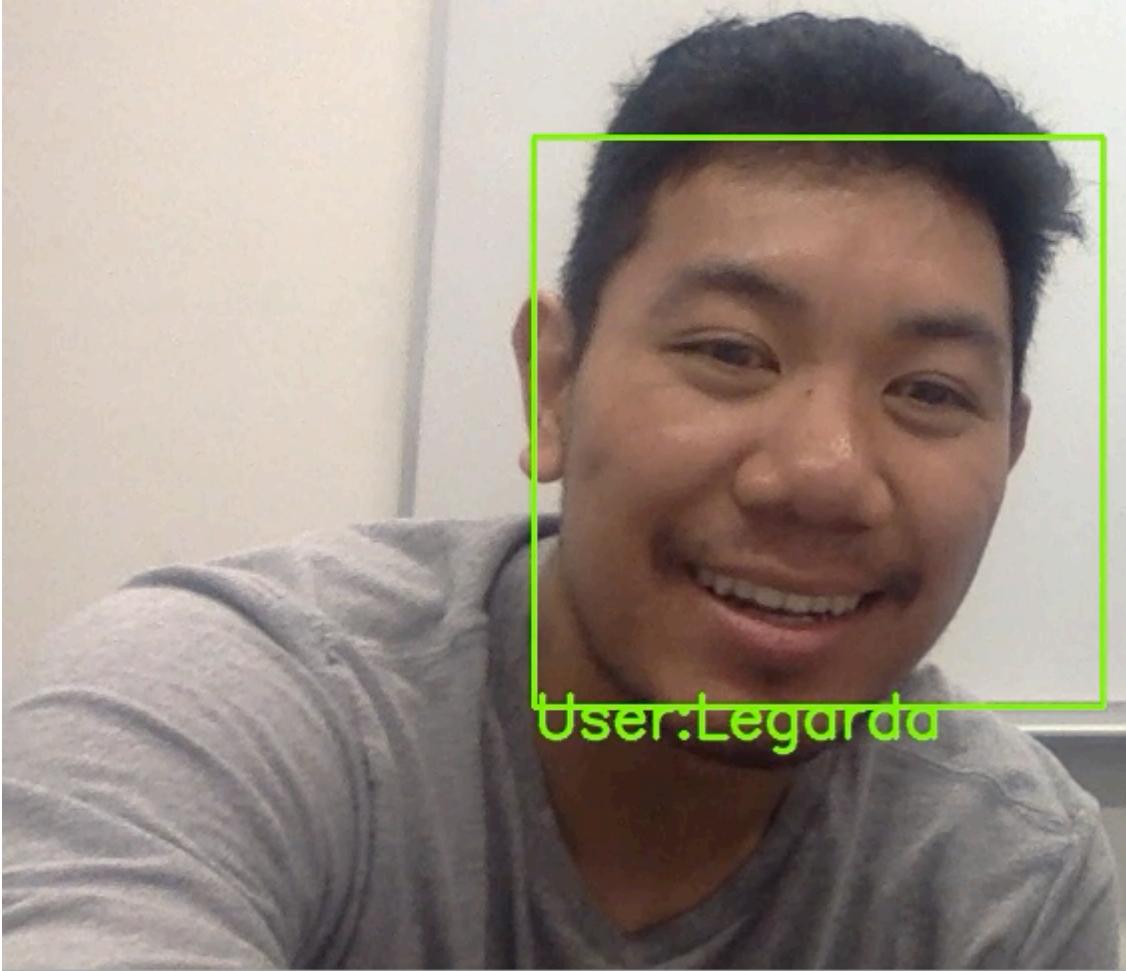




User:Cristi

A dark, grainy video feed from a web camera. The image is mostly black, with some faint, blurry shapes of a person's head and shoulders visible. The person appears to be wearing a light-colored shirt. The overall quality is low, with significant noise and artifacts.

Gradients on Web Cam Feed

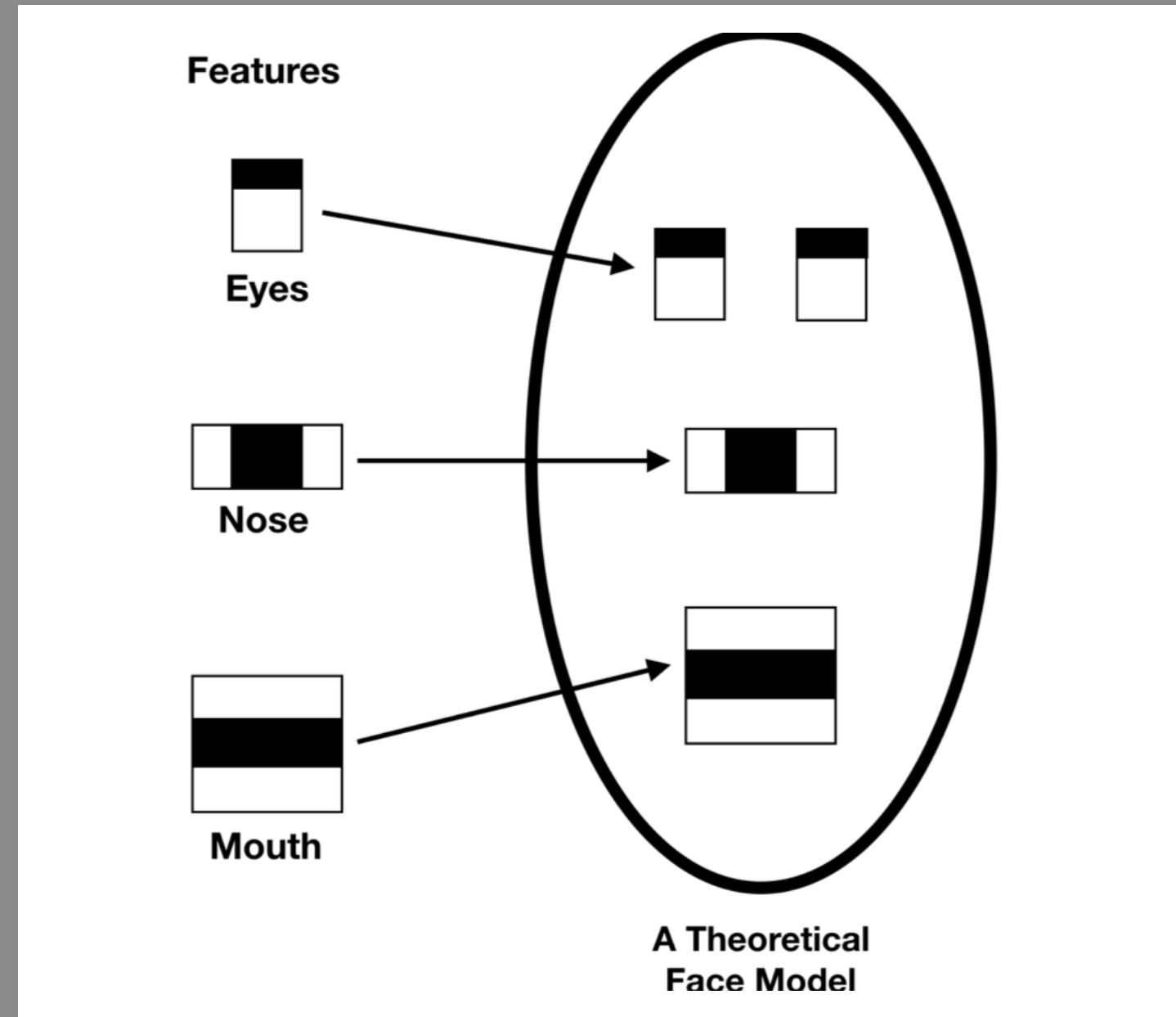
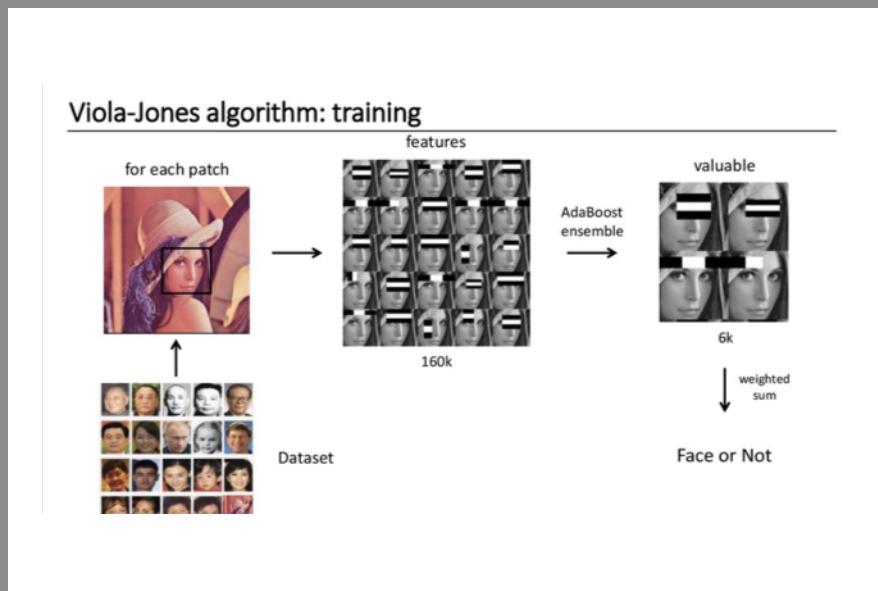
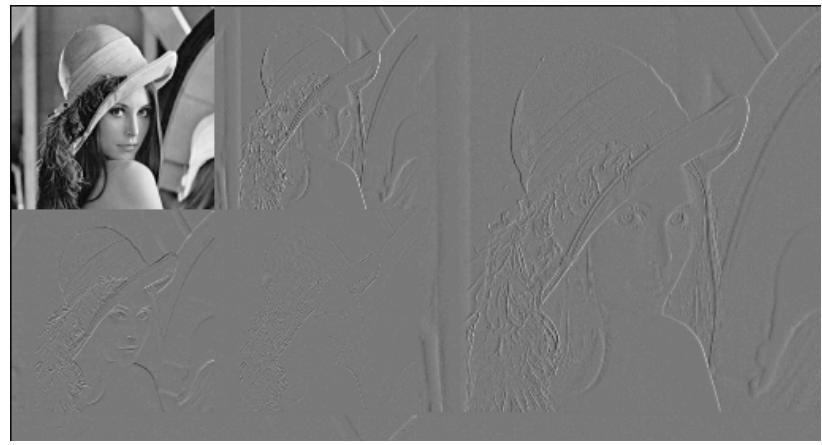


# Haar vs. HOG

# Haar Cascades

- Advantages
  - Faster
  - Great at face detection
  - Initially less accurate than HOG
- Disadvantages
  - Bad at recognition
  - Needs a bigger data set
  - Time consuming





# HOG Algorithm

- Advantages
  - Very accurate face detection
  - No need to train its own cascades
  - Great at face recognition
- Disadvantages
  - Slower than Haar



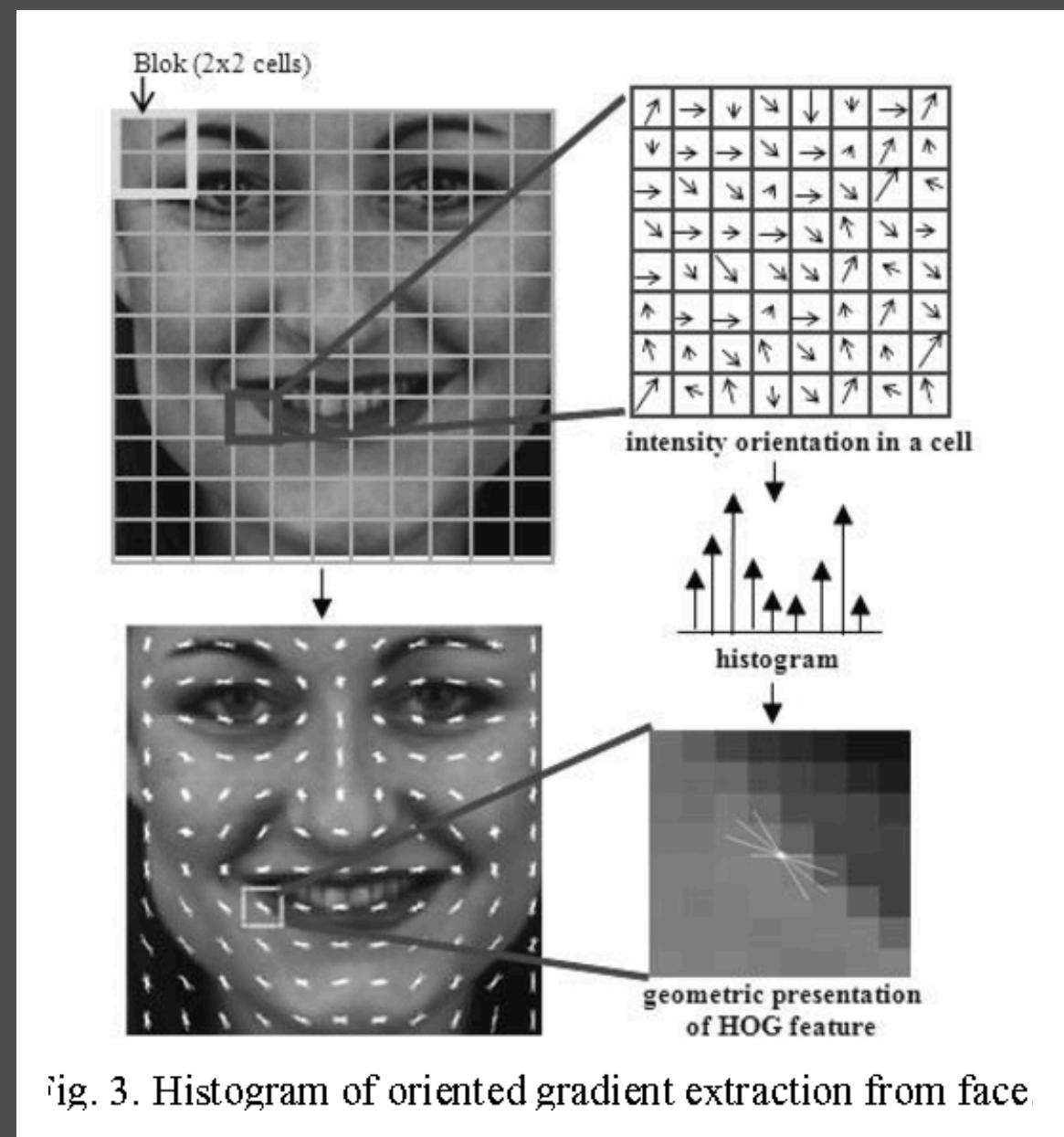
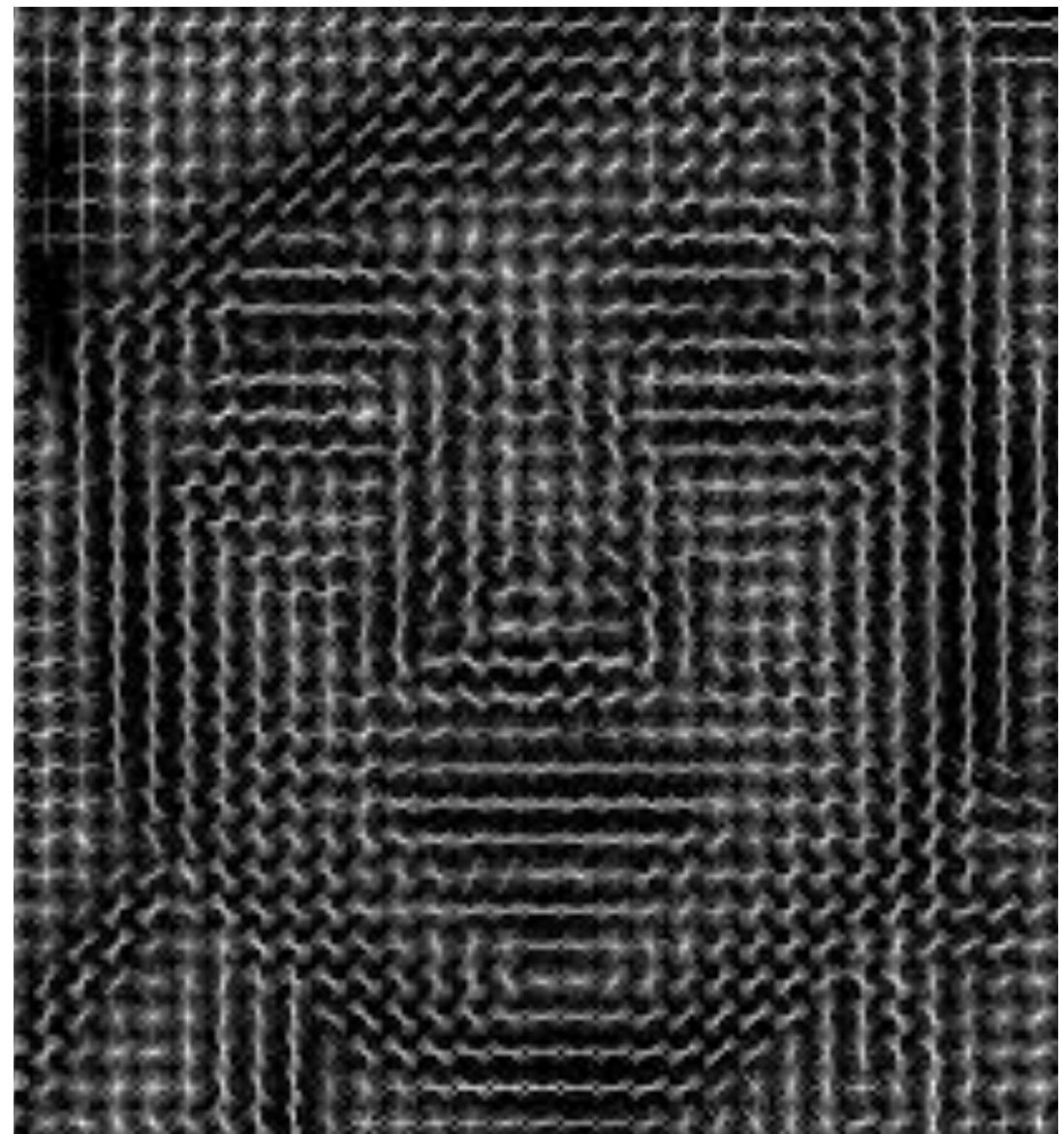


Fig. 3. Histogram of oriented gradient extraction from face



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# Extra Features

- Web Scraping
- Dash Plotly User Interface
- Capture Image and Retraining Option



Demo

