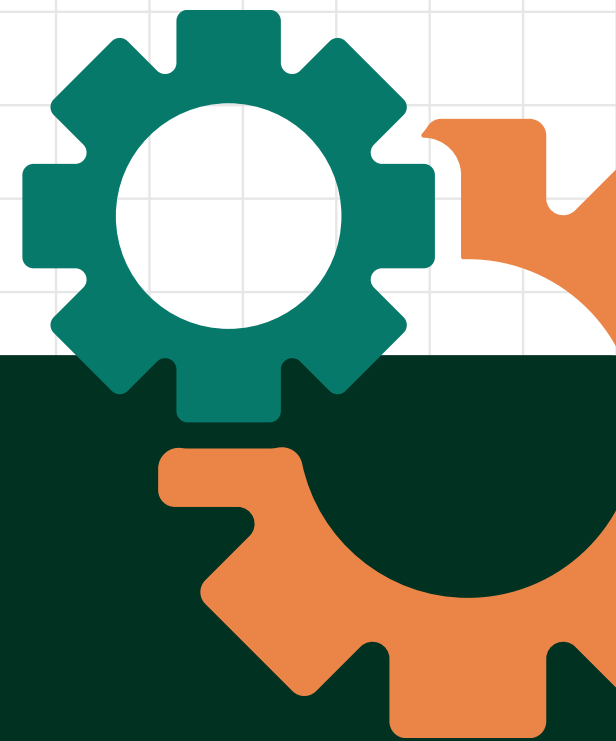




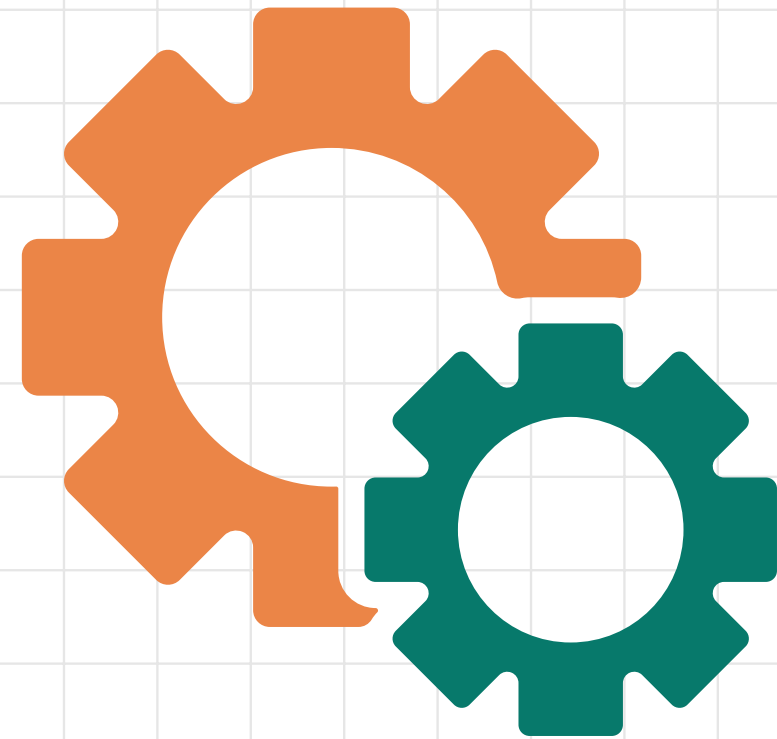
Face Image Detection

Present by - Thiri Than Myint

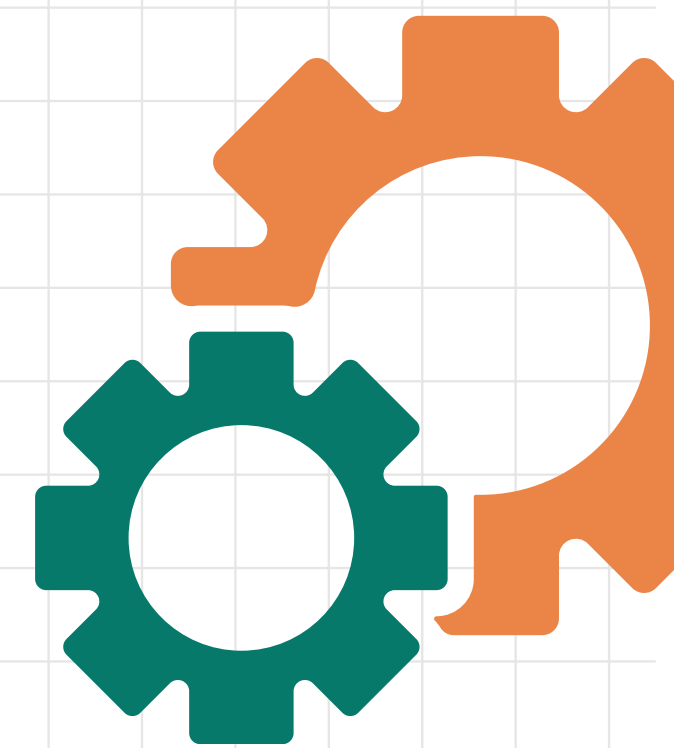


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Dataset Overview



FairFace is a face image dataset which is race balanced. It contains 108,501 images and images were collected from the YFCC-100M Flickr dataset and labeled with race, gender, and age groups.

- Age: Categorical (e.g., 0–2, 3–9, 10–19, etc.).
- Gender: Binary (Male, Female).
- Ethnicity: Seven classes (White, Black, Asian, Indian, Latino_Hispanic, Middle Eastern, Southeast Asian).

Data Processing

- Normalization: Scale pixel values to $[0, 1]$ for standardized inputs.
- Augmentation: Random rotations, flips, and resizing to mitigate overfitting.
- Dataset Split:
 - Training: 70%
 - Validation: 15%
 - Testing: 15%
 - Goal: Maintain class balance.

Model Design

CNN Architecture:

- Feature Extraction Layers:
 - Convolutional layers (filters: 32, 64, 128).
 - ReLU activation and max-pooling for down-sampling.
- Flattening Layer:
 - Converts feature maps to 1D.
- Fully Connected Layers:
 - Age: Multi-class classification.
 - Gender: Binary classification.
 - Ethnicity: Multi-class classification.

- Loss Functions:
 - Age: Cross-Entropy Loss (multi-class).
 - Gender: Cross-Entropy Loss (binary).
 - Ethnicity: Cross-Entropy Loss (multi-class).
- Optimizer: Adam with learning rate scheduler.
- Batch Sizes: Experiment with 32, 64.
- Epochs: Experiment with 10–20 epochs.

Performance Evaluation

- Metrics:
 - Age: Mean Absolute Error (MAE) and Accuracy.
 - Gender & Ethnicity: Accuracy, Precision, Recall, F1-score.

Wedge

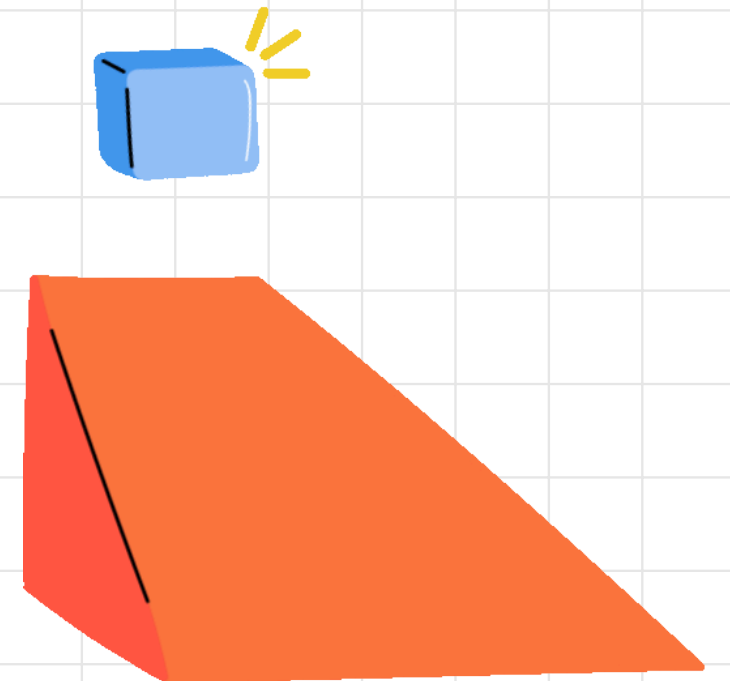
A wedge is a tool that narrows to a thin edge. An ax is an example of a wedge.

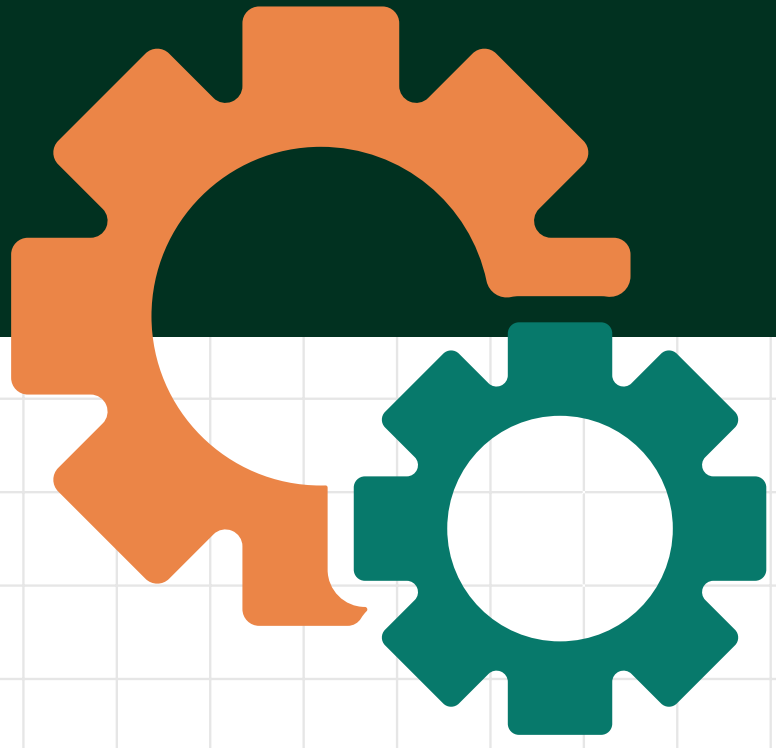
Screw

**Screws are simple tools rods
with edges around a pole.**

Inclined Plane

An inclined plane is a tool with a flat surface and elevated at one end. An example of an inclined plane is a ramp.





Thank you!

I hope you learn something new today.

