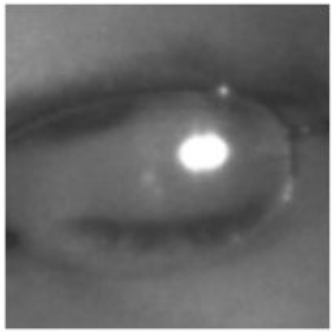
Driver Drowsiness Detection

Saurabh Kumar Singh
222CS029

MRL Eye Dataset

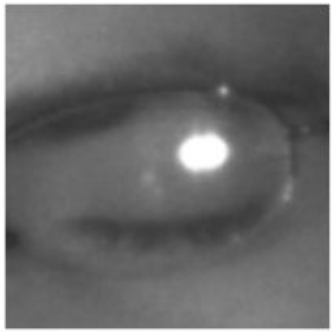


s0012_03054_0_1_0_2_1_01

s0014_04371_0_0_1_0_1_03

- **84,898 images**

MRL Eye Dataset

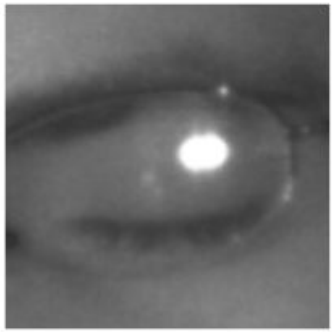


s0012_03054_0_1_0_2_1_01

s0014_04371_0_0_1_0_1_03

- 84,898 images
- subject ID

MRL Eye Dataset

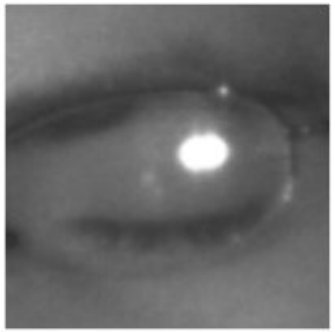


s0012_03054_0_1_0_2_1_01

s0014_04371_0_0_1_0_1_03

- 84,898 images
- subject ID
- image ID

MRL Eye Dataset

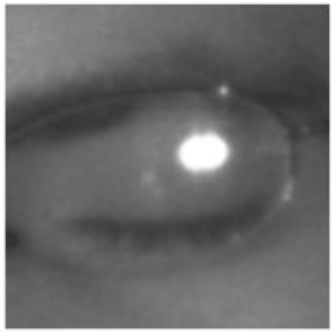


s0012_03054_0_1_0_2_1_01

s0014_04371_0_0_1_0_1_03

- 84,898 images
- subject ID
- image ID
- gender

MRL Eye Dataset



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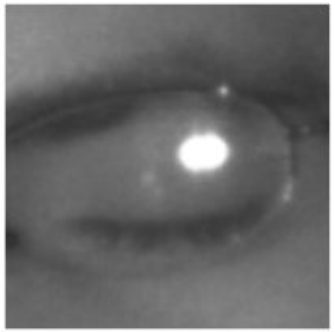
s0014_04371_0_0_1_0_1_03

- 84,898 images
- subject ID
- image ID
- gender
- glasses

MRL Eye Dataset

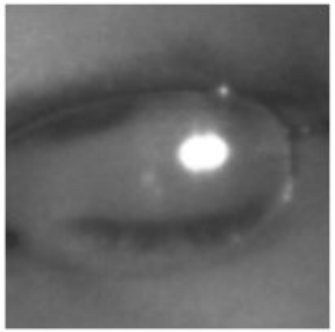


s0012_03054_0_1_0_2_1_01

s0014_04371_0_0_1_0_1_03

- 84,898 images
- subject ID
- image ID
- gender
- glasses
- eye state

MRL Eye Dataset

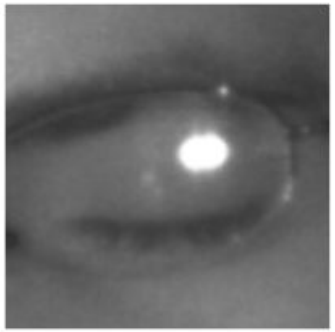


s0012_03054_0_1_0_2_1_01

s0014_04371_0_0_1_0_1_03

- 84,898 images
- subject ID
- image ID
- gender
- glasses
- eye state
- reflections

MRL Eye Dataset

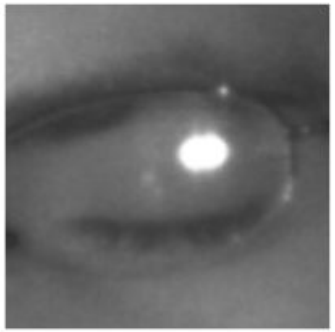


s0012_03054_0_1_0_2_1_01

s0014_04371_0_0_1_0_1_03

- 84,898 images
- subject ID
- image ID
- gender
- glasses
- eye state
- reflections
- lighting conditions

MRL Eye Dataset



s0012_03054_0_1_0_2_1_01

s0014_04371_0_0_1_0_1_03

- 84,898 images
- subject ID
- image ID
- gender
- glasses
- eye state
- reflections
- lighting conditions
- sensor ID (640 x 480, 1280 x 1024, 752 x 480)

		Train		Test		Validation	
Architecture	**Activation Function**	**Accuracy**	**Loss**	**Accuracy**	**Loss**	**Accuracy**	**Loss**
InceptionV3	**RELU**	**0.84**	**0.19**	**0.83**	**0.16**	**0.81**	**0.19**
	LeakyReLU	**0.83**	**0.20**	**0.82**	**0.17**	**0.78**	**0.28**
	Sigmoid	**0.83**	**0.18**	**0.84**	**0.16**	**0.82**	**0.18**

		Train		Test		Validation	
Architecture	**Activation Function**	**Accuracy**	**Loss**	**Accuracy**	**Loss**	**Accuracy**	**Loss**
MobileNetV2	**RELU**	**0.82**	**0.19**	**0.83**	**0.16**	**0.84**	**0.20**
	LeakyReLU	**0.81**	**0.20**	**0.82**	**0.17**	**0.80**	**0.22**
	Sigmoid	**0.80**	**0.21**	**0.78**	**0.19**	**0.80**	**0.21**

		Train		Test		Validation	
Architecture	**Activation Function**	**Accuracy**	**Loss**	**Accuracy**	**Loss**	**Accuracy**	**Loss**
EfficientNetB4	**RELU**	**0.69**	**0.49**	**0.69**	**0.46**	**0.68**	**0.51**
	LeakyReLU	**0.71**	**0.43**	**0.72**	**0.47**	**0.71**	**0.44**
	Sigmoid	**0.74**	**0.50**	**0.71**	**0.49**	**0.72**	**0.51**

ARCHITECTURE

- Convolutional Layer (32 filters, 3x3 kernel, ReLU activation)
- Max Pooling Layer (2x2 pool size)
- Convolutional Layer (64 filters, 3x3 kernel, ReLU activation)
- Max Pooling Layer (2x2 pool size)
- Convolutional Layer (128 filters, 3x3 kernel, ReLU activation)
- Max Pooling Layer (2x2 pool size)
- Flatten Layer
- Fully Connected Layer (Dense, 64 units, ReLU activation)
- Dropout Layer (50% dropout rate)
- Fully Connected Layer (Dense, 2 units, softmax activation)

	Train	Validation	Test
Accuracy	0.63	0.65	0.68
Loss	0.37	0.36	0.34

COMPARISON

Name	Total Parameters	Trainable Parameters	Accuracy
InceptionV3	21934050	131266	0.83
EfficientNetB4	18706209	1032386	0.70
MobileNetV2	2995458	797474	0.81
MY MODEL	617730	617730	0.68

THANK YOU