**IRIS RECOGNITION SYSTEM**

**Database Link**: <http://biometrics.idealtest.org/dbDetailForUser.do?id=4>

Dataset: Casia\_interval

**Implementation:**

We implemented a proposed system in “A Computer Vision System for Iris Recognition

Based on Deep Learning” paper. As we can see from the graph of the proposed model the model accuracy is very high compared to the validation accuracy, which is a sign of overfitting.

Following are the methods implemented to overcome overfitting and improve validation accuracy:

1. Image Augmentation: we used image augmentation techniques to increase training data and help the model to train on multiple images.

Following are the augmentation techniques:

1. Image rotation: clockwise and anti-clockwise rotation
2. A horizontal flip of the image
3. A vertical flip of the image
4. Blurring the image using gaussian blur
5. Adding random noise to the image
6. Warp shifting
7. Introducing different values of dropouts:

We used different values of dropouts to get maximum validation accuracy. The dropouts do not allow the models to remember the training data completely. The dropouts drop some neurons in the neural network which do not play a significant part in classifying the image. We came across different values but dropout = 0.3 was the best that we came across.

1. Activation functions:

Activation functions are most important behind the firing of a neuron. We used the following activation functions:

1. ReLU
2. Leaky ReLU
3. Sigmoid
4. TanH
5. Optimizers:

Optimizers help in reaching global/local minima of error space. We used the following optimizers and compared the results and we found Adam is the best suit for the system

1. RMSprop
2. Adam
3. Adagrad

**Results**:

|  |  |
| --- | --- |
| Proposed Model | Improved model |
|  |  |
|  |  |