

# Detection of Diabetic Eye Diseases

MATLAB EXPO 2017

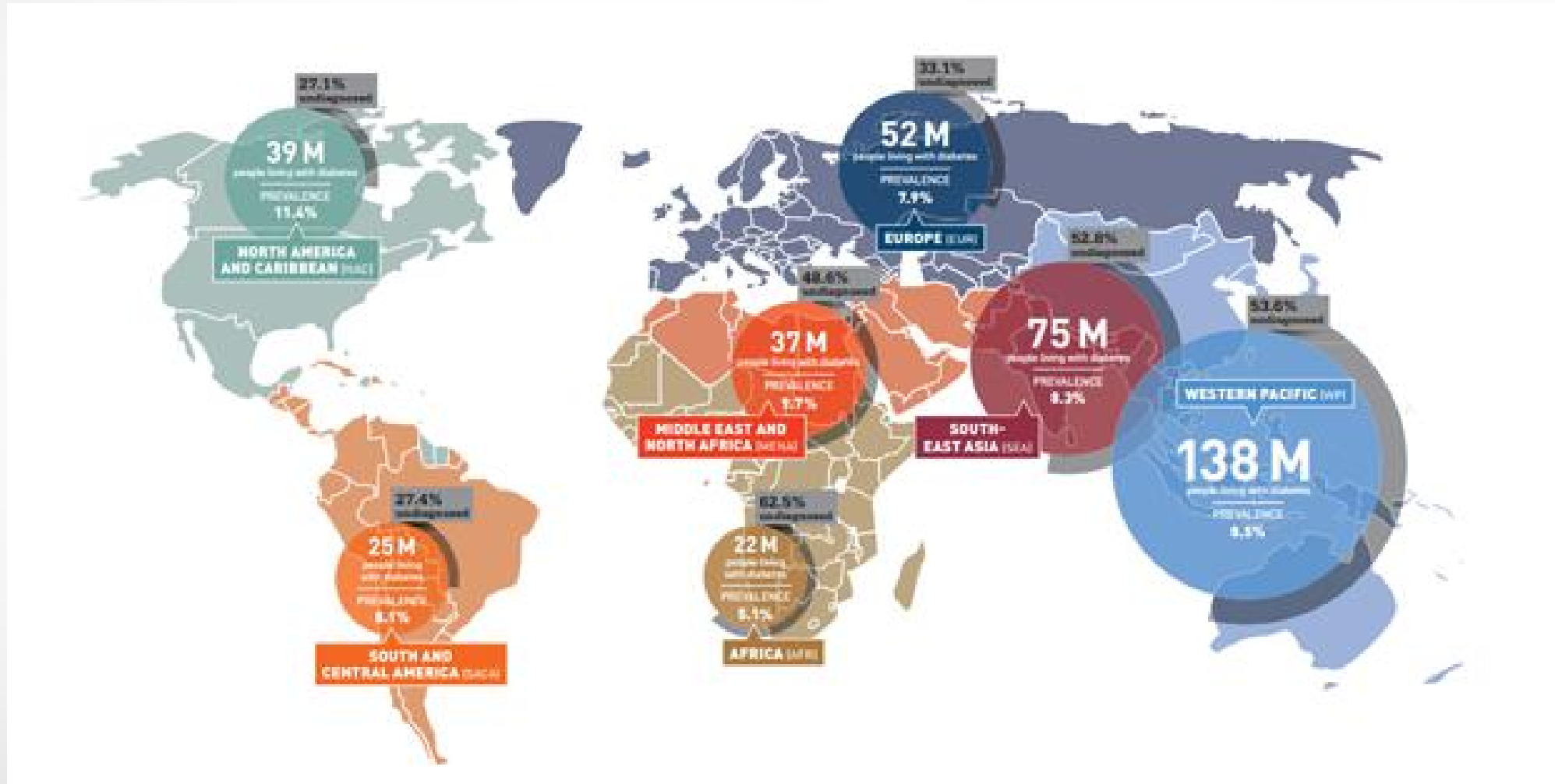
by:

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# Statistics of Diabetes

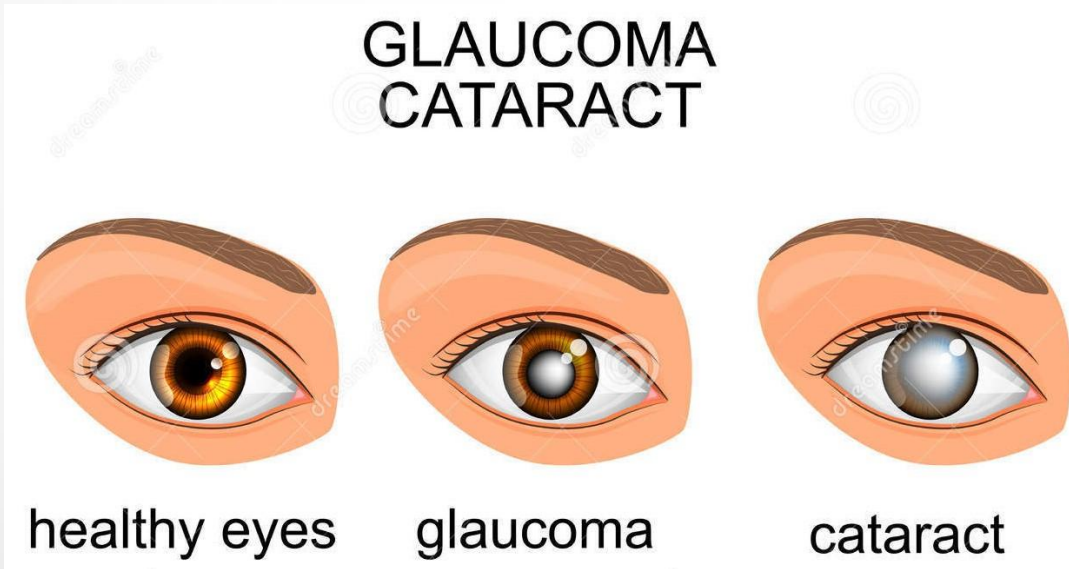


# Eye conditions that effect people with Diabetes

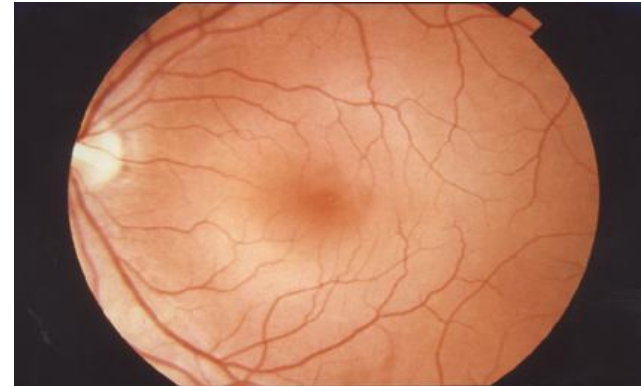
- Diabetic retinopathy,
  - Diabetic macular edema (DME),
  - Cataract
  - Glaucoma.
- 
- Out of the above mentioned diseases, **Diabetic Retinopathy(DR)** is one of the serious eye conditions which occur in diabetic patients with long diabetic history.
  - DR is the process of deposition of blood over the retina which will eventually lead to serious vision problems.



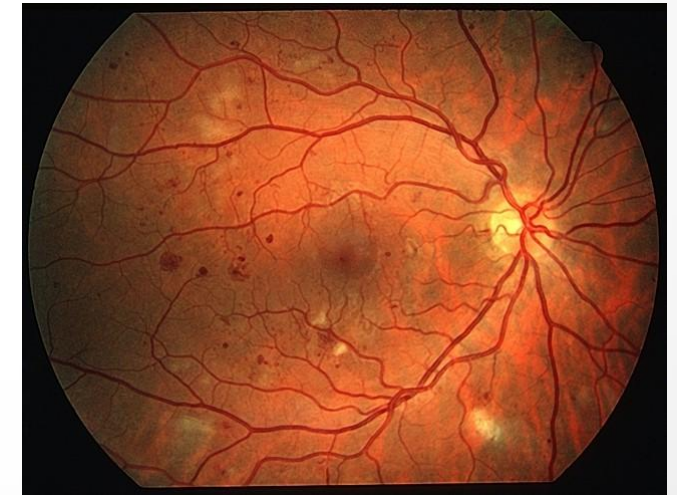
# Difference between Diabetic eye diseases



normal fundus



fundus with DR



# Problem Statement

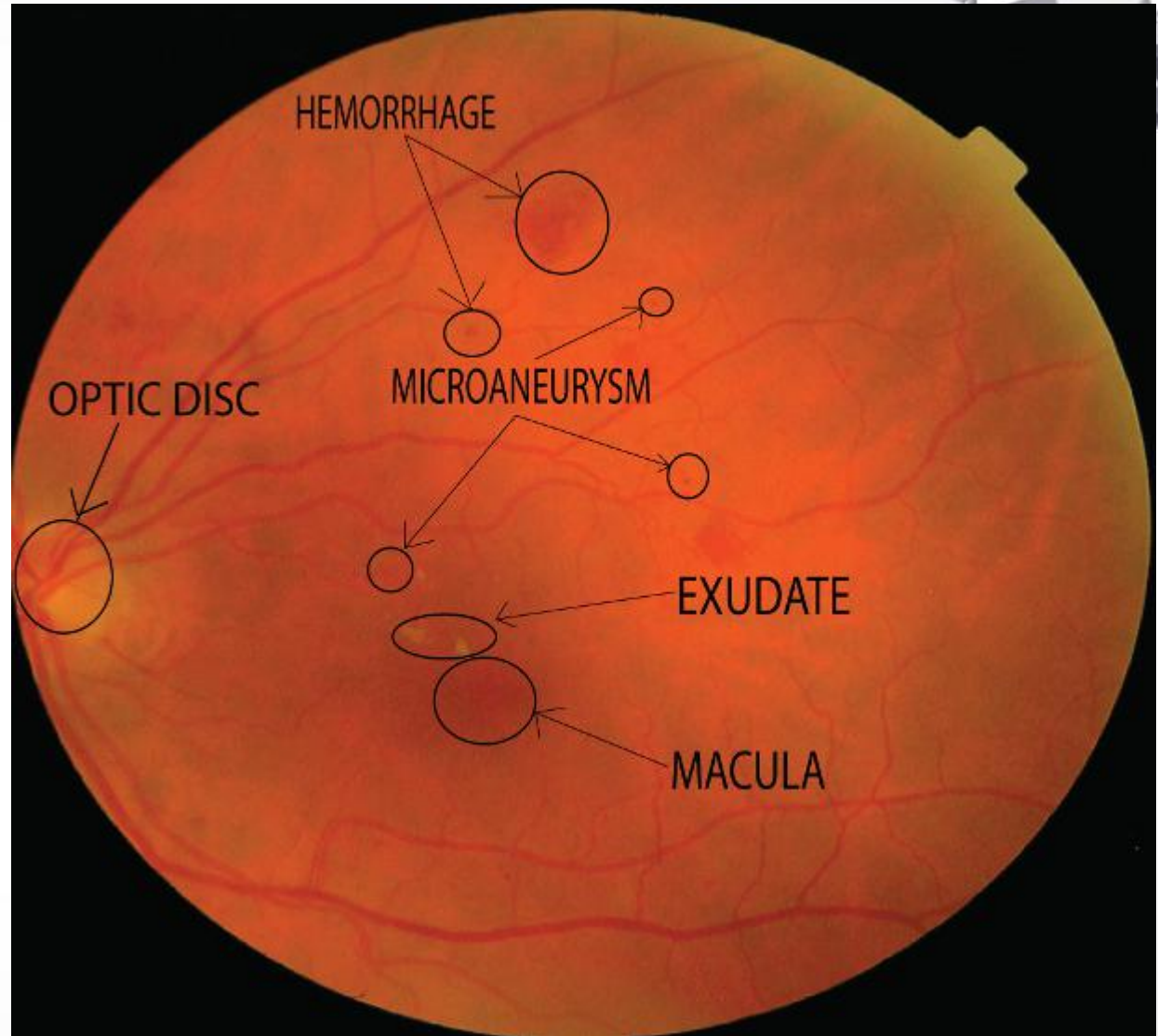
- As people with diabetes are increasing ,it is difficult to get constant attention of ophthalmologists

# Solution

- Automatic detection with accuracy is necessary .

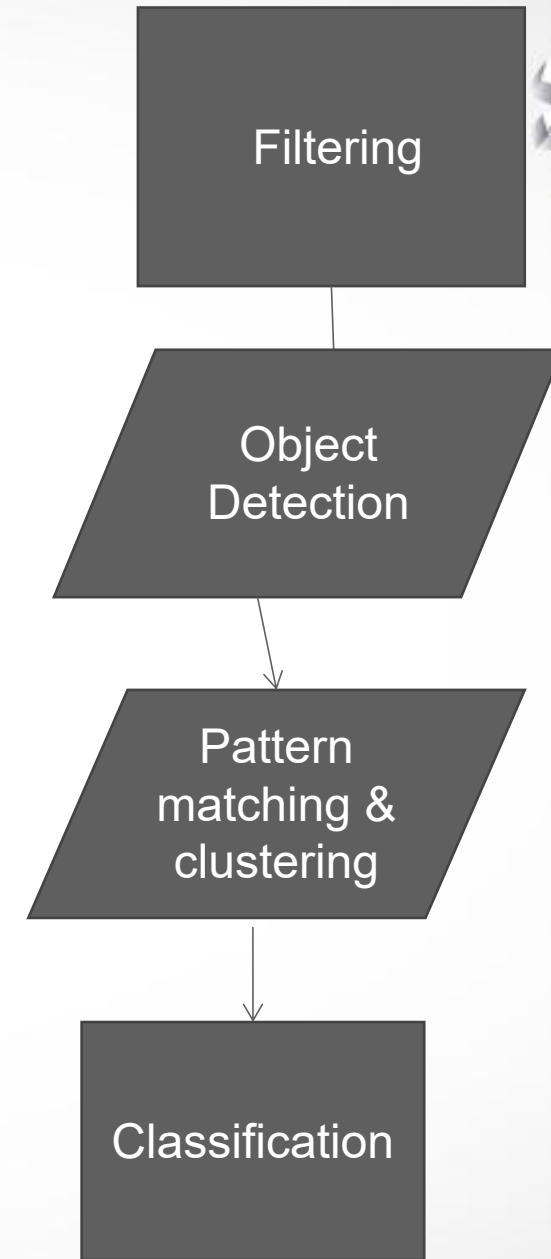
# Parameters to be analysed to confirm DR.

- Tortuosity of blood vessels
- Microaneurysms
- Hemorrhage
- Lesions
- Exudates

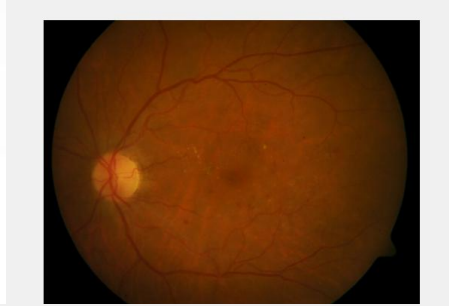


# Algorithm

- fundus Image has to be loaded
- Detection of the above parameters mentioned earlier, has to be done based on their occurancy.
- Develop a ranking factor using machine learning techniques to determine the seriousness of the disease.



# Parameter to be extracted are taken from these images



Normal Fundus images

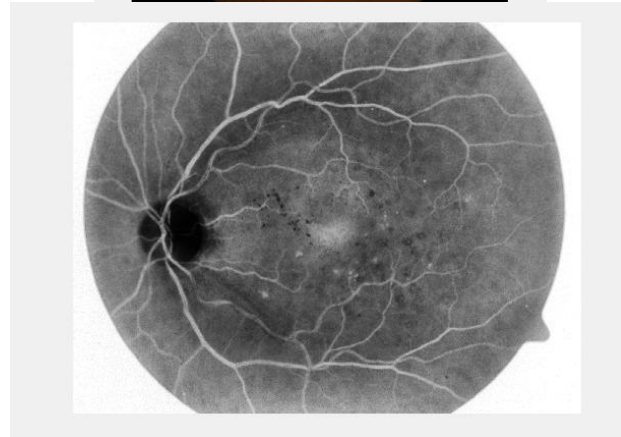


Image used to extract nerve related parameters

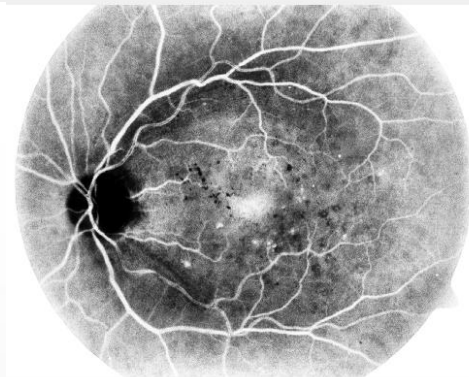


Image used to extract microaneurysms,exudates

The above images are extracted using Image processing techniques,the parameters obtained are used in machine learning techniques





# Conclusion

- The parameters thus obtained are used to train the ML algorithms which will be learning to classify an image as Diabetic Retinopathy or not.