

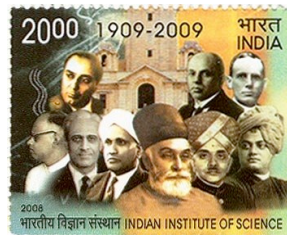
# Image Processing and Machine Learning for Healthcare Applications

Chandra Sekhar Seelamantula

Assistant Professor  
Department of Electrical Engineering  
Indian Institute of Science  
Bangalore  
Email: [chandra.sekhar@ieee.org](mailto:chandra.sekhar@ieee.org)



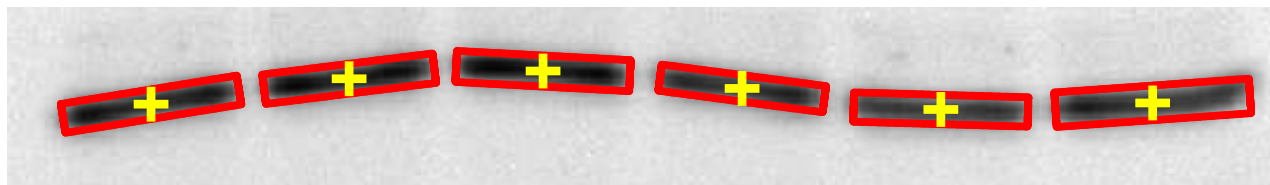
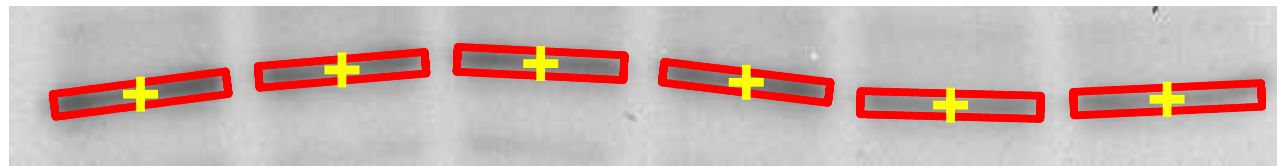
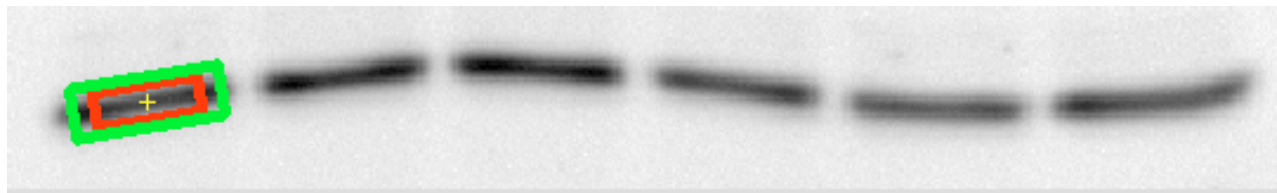
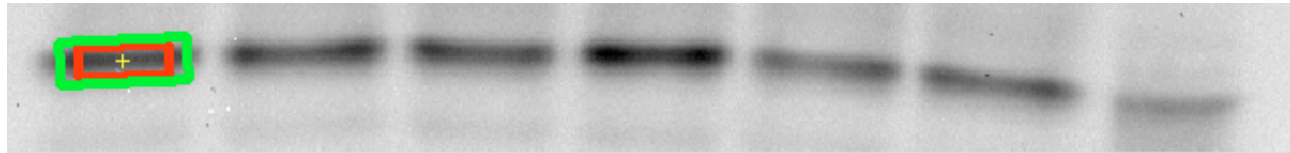
December 19, 2011



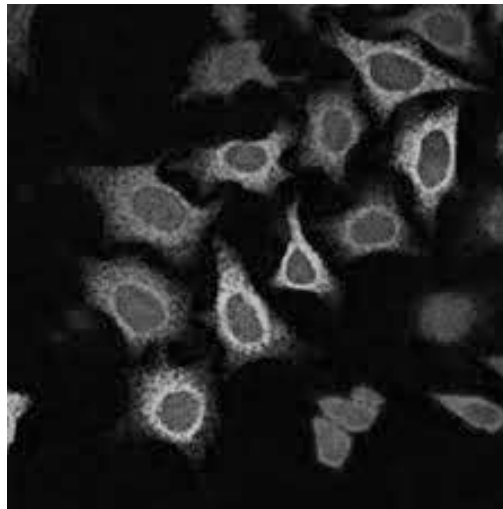
# Outline

- Medical image segmentation
- Image processing to enable diagnostics
- Content-based medical image retrieval

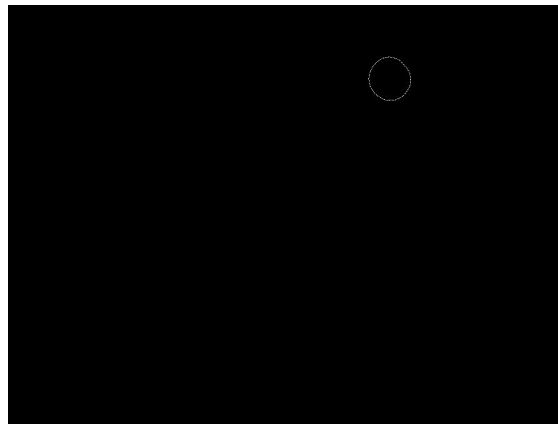
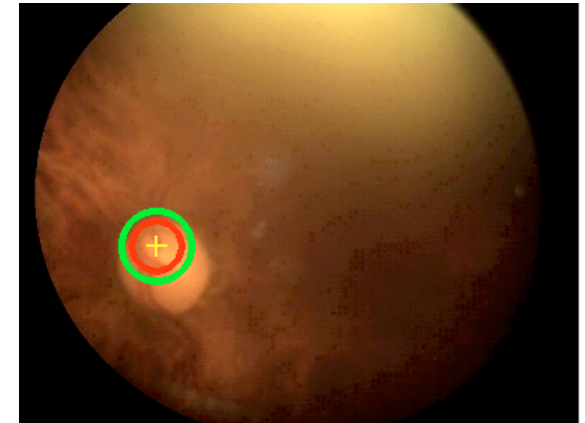
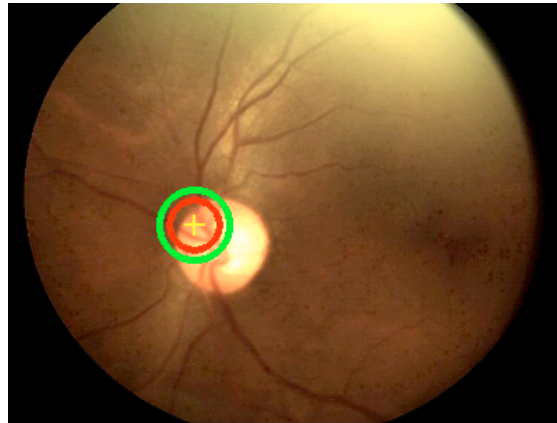
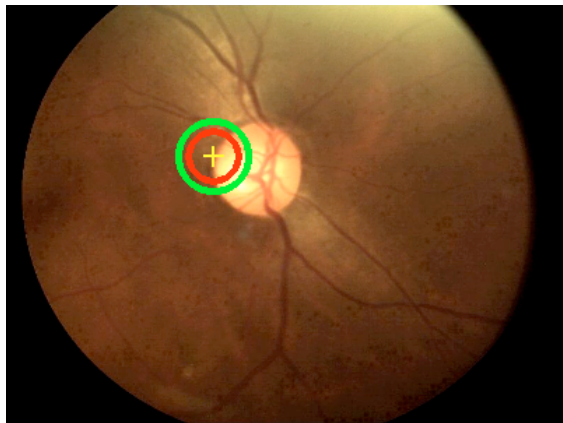
# Biological image segmentation



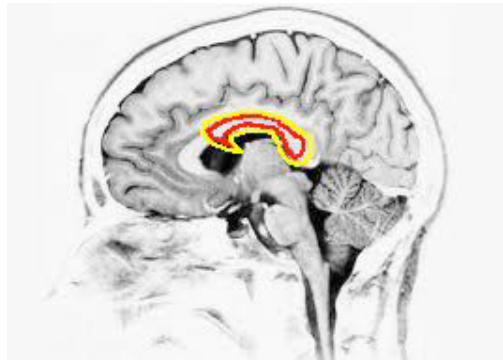
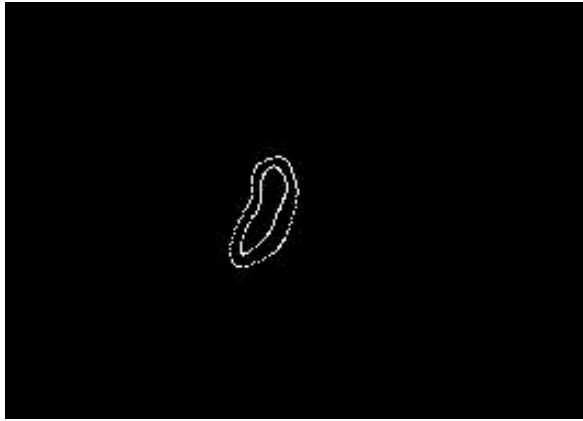
# Biological image segmentation



# Image analysis for diabetic retinopathy



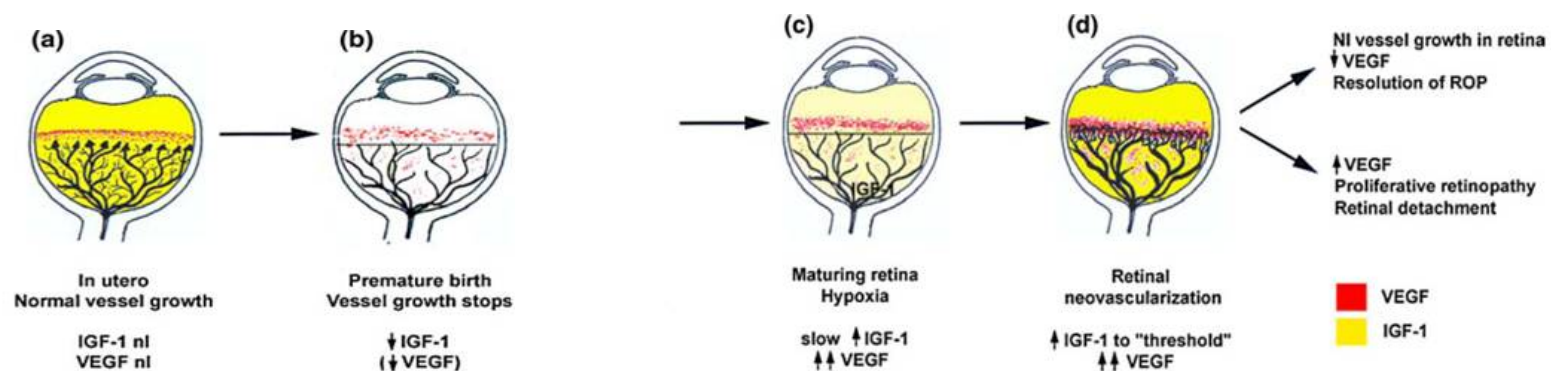
# Medical image segmentation



# Image processing for clinical diagnostics (Retinopathy of prematurity)

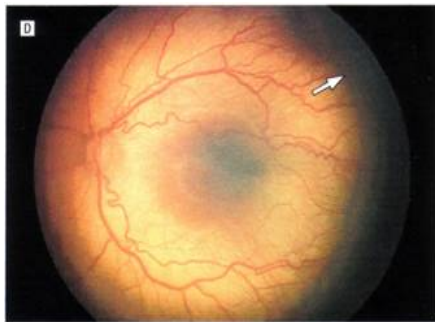
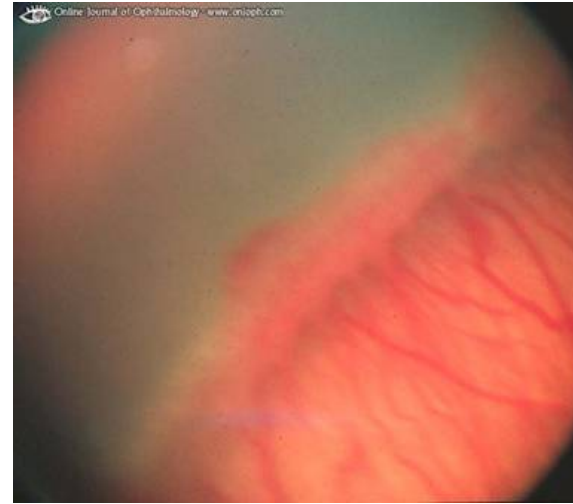
- Blood vessels of retina begin to develop 3 months after conception
- Complete development for normal birth
- Prematurely born babies → disrupted eye development
- Vessels grow abnormally → scar tissue → vision loss (five stages)
- Treatment within 72 hours can help correct matters

weight < 1.5 kg, GA < 31 weeks





# ROP - Stages



Plus disease



# Content-based medical image retrieval

- Medical image database
- Features specific to the imaging modality
- Training, classification
- History extraction and comparison

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