Algorithms for skiascopy measurement automatization
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- Skiascopy or retinoscopy is an objective technique to measure the refractive state of the eye.
- Light beam is thrown over the eyes pupil and reflex motion is analyzed.
- Static – still distance (0,5m), putting lenses in from of the eye
- Or dynamic – distance is changed to get the neutralization.

The Movement of Red Reflex during Retinoscopy

Schematics of retinoscope
1- CCD matrix with electric circuit, 2- focusing optics, 3- servo motor, 4- semitransparent mirror, 5- IR LED, 6- accommodative stimuli, 7- subject's eye, 8- system stand with moveable chassis.

How it looks like?

CCD matrix sensitivity to 850 nm light
1- CCD matrix with electric circuit, 2- focusing optics, 3- servo motor, 4- semitransparent mirror, 5- IR LED, 7- artificial eye, 8- system stand with moveable chassis.
Reflex intensity information

Position information

Reflex intensity

Halfwidth of reflex intensity

Intensity halfwidth based algorithm

Thank you for attention!

Threshold = (min+max)/2
S=1, if i > threshold
S=0, if i <= threshold

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Intensity halfwidth based algorithm

• iv – intensity value
• w – width (actually is the speed information)

For each sweep(i)
  if iv(i) < iv(i-1) & w(i) < w(i-1), then step +
  if step(i-1, -2, -3, -4) = -+-+, then break loop
  else step –
End

Research is supported by ESF 2013/0021/1DF/1.1.1.2/13/APIA/VIAA/001