Height of an average human head:

Male: **9.4 in / 23.9 cm** for 99th percentile

8.6 in / 21.8 cm for 50th percentile

Female: **9.4 in / 23.9 cm** for 99th percentile

8.6 in / 21.8 cm for 50th percentile

Source:

http://upload.wikimedia.org/wikipedia/commons/6/61/HeadAnthropometry.JPG

Distance from eyes to tablet at a "relaxed" (elbows at 90 degrees) posture:

43 cm / 17 in

Diagonal Field Of View (DFOV) of webcam:

60 degrees

Aspect ratio:

16 : 9

Length of diagonal of image at given distance and DFOV:

d = 2 * 43 * tan(0.5 * 60) = **49.65 cm / 19.55 in**

Height of width image at given distance and DFOV:

(16*x)^2 + (9*x)^2 = (49.65)^2

→ x = 2.7046

→ height = 9*x = **24.34 cm / 9.58 in**, width = 16*x = **43.27 cm / 17.04 in**

Resolution: **720p** (1280 x 720)

720p / 9.58 in = **75 pixels / inch**

Bounding box of human eye:

height = 2 in

width = 2.5 in

At 75 pixels per inch, the resolution of the eye area will be **~ 187 x 150**.

To calculate an approximate expected visual angle at this resolution:

Average radius of human eye = **12 mm**

75 px / in gives **0.339 mm per pixel**

Using inverse tangent, this gives a visual angle of **1.62 deg per pixel**

This value is less than 2 deg, the ideal specification for visual angle.