Assignments/Announcements

• My office hours:
  – Tuesdays 1-2pm, SE2 Rm. 215
  – Or by appointment

• TA office hours:
  – Xueqing:
    • Tuesdays 8:30-9:30am
    • Open area on ground floor of SE2
  – Nakul:
    • Fridays 11am-noon
    • SE2 Rm. 311
Assignments/Announcements

• Lab #1 assigned, due Mon. Sept. 17 by 11:59pm through CatCourses.

• Lab report format.

• Lab grading rubric.

• Lab 1 overview.
Questions?
Today

- Chap. 2: Digital Image Fundamentals (continued)
Recording focus of attention

Fig. 13. The P₁ suction device or "cap."

Recording focus of attention

Fig. 24. Position of lids held by strips of adhesive plaster in work with all caps except type P1.

Recording focus of attention

Recording focus of attention

• Modern eye tracking systems
• Pupil-corneal reflection
Fig. S2. A reproduction of A.I. Rzhevskaya's picture "A Happy Minute" with records of the movement of each eye during free (without instruction) examination of the reproduction by one eye for a period of 30 sec (the second eye was completely covered by a P2 cap).
Fig. 53. Record of eye movements during examination of geometrical figures. a) Geometrical figures presented to the subject for examination; b) record of eye movements during which the subject tried to trace the lines of the figures with his eye smoothly and without saccades; c) record of eye movements during free (without instruction) examination of the figures for 20 sec; d) record of eye movements during examination of the figures for 20 sec after the instruction "look at the figures and count the number of straight lines."

Fig. 109. Seven records of eye movements by the same subject. Each record lasted 3 minutes. The subject examined the reproduction with both eyes. 1) Free examination of the picture. Before the subsequent recording sessions, the subject was asked to: 2) estimate the material circumstances of the family in the picture; 3) give the ages of the people; 4) surmise what the family had been doing before the arrival of the "unexpected visitor"; 5) remember the clothes worn by the people; 6) remember the position of the people and objects in the room; 7) estimate how long the "unexpected visitor" had been away from the family.

Fig. 114. Photograph of a girl's face. Record of the eye movements during free examination of the photograph with both eyes for one minute.
Fig. 115. The first page of the magazine "Ogonek," No. 23 (1959); "Girl from the Volga" (photograph by S. Fridlund). Record of the eye movements during free examination of the photograph with both eyes for 3 minutes.

Recording focus of attention

Fig. 118. Reproduction of I.I. Shishkin's picture "In the Forest." Record of the movements of one eye during free examination of the picture with both eyes for 10 minutes.

Predicting focus of attention

Predicting focus of attention

Figure 13. Comparison between regions selected by a model using saliency alone and by the full model for the people search task. Each panel shows on the top left the input image, and on the bottom left the image with the first 4 fixations for all 8 participants superimposed. The top row shows the regions predicted by saliency alone (the images show fixations 1-2 and 3-4 for the 8 participants). The bottom row shows the regions predicted by the full model that integrates context and saliency.

Chap 2: Elements of visual perception

• Image formation in the eye

• There are many geometric models for imaging systems
  – Pinhole camera (above): simplest
    • + Everything is in focus
    • - Typically, does not allow enough light to reach imaging plane
  – Lenses:
    • + Allows more light to reach imaging plane
    • - Has a limited field of focus (depth of field)