MexCulture142

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Technical parameters

The MexCulture142 dataset contains images of Mexican Cultural heritage recorded during ANR
PI Mexculture by IPN CITEDI and gaze fixations data recorded with an eye-tracker at LABRI
UMR 5800 CNRS/University of Bordeaux/IPN. The goal of psycho-visual experiment is to record
gaze fixations of subjects executing a visual task of recognition of architectural styles of Mexican
Cultural heritage. Each category represents different views of the same architectural structure.

The dataset contains 142 subclasses of Prehispanic, Colonial, Modern buildings, we provide 2
examples for each class and the corresponding `.txt` files of gaze fixations. Also, the saliency map
of each image and `.txt` scanpath files where we have the coordinates and duration of fixations per
subject.

Number of categories	142
Images per category	2
Total	**284**

To recognize the architectural styles of Mexican buildings, the participants read instructions
first with examples of images of target classes shown. Then, the eye-tracker system is callibrated
for each participant. Then, they then visualize images of the buildings on the experimental screen.
Each image is shown for 3 seconds, then a gray frame is shown to reset their attention.

Time for image displaying	3 seconds
Time for gray frame displaying	1 second
Time for calibration	60 seconds
Time to read instructions	180 seconds
Total time	**28 minutes**

For a group of 23 participants, taking around 30 minutes per participant, the experience should
take 11.5 hours. This experience was done in 6 sessions. The gaze fixations were recorded on
a single eye of participants using a Cambridge Research Eye-tracker System High-Speed VET
(250Hz). The age of participants was 23.7±2.8 years old, selected with an educational level of
Master and PhD, all of them as students.

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Content description
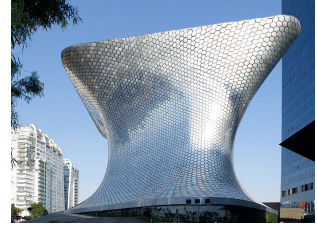
The dataset contains 4 folders:

- Images: contains 142 categories of Prehispanic, Colonial and Modern styles.
- Fixations: holds `.txt` files which are the corresponding fixations of source images.
- Density Maps: contains the subjective saliency maps of each category, calculated as in [2].
- Scanpaths: includes 6532 (284×23 participants) `.txt` files with fixation coordinates (in pixels) and fixations length (in seconds).

(a) Prehispanic　　　　　　　　(b) Colonial　　　　　　　　(c) Modern

Figure 1: General architectural styles of Mexican Culture heritage.

The identifier for each filename is composed as follows:

- Images: SSS_XXX_YYY_N_#.png
- Fixations: SSS_XXX_YYY_GazeFix_N_#.txt
- Density Maps: SSS_XXX_YYY_GFDM_N_#.png
- ScanPath: SSS_XXX_YYY_ScanPath_N_#_P_⋆.txt

Where "SSS" is the architectural style, "XXX" the name of the building, "YYY" the location (state), required because we have the same name for some buildings in different states in Mexico and "#" is the sample number. For Scanpaths, "*" gives the participant id number.

Here some examples of filenames:

- Prehispanic_Yaxchilan_Chiapas_N_2.png
- Prehispanic_Yaxchilan_Chiapas_GazeFix_N_2.txt
- Prehispanic_Yaxchilan_Chiapas_GFDM_N_2.png
- Prehispanic_Yaxchilan_Chiapas_ScanPath_N_2_P_1.txt

References

[3] A. Montoya, J. Benois-Pineau, M. S. Vázquez, A. R. Acosta, K. Guissous and V. Gouet-Brunet, **Comparative study of visual saliency maps in the problem of classification of architectural images with deep CNNs**, in 2018 Eighth International Conference on Image Processing Theory, Tools and Applications (IPTA), China, 2018.

[2] DAVID S. Wooding **Eye movements of large populations:II. Deriving regions of interest, coverage,and similarity using fixation maps**, in Behavior Research Methods, Instruments, & Computers, 2002.

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To download files: https://www.nakala.fr/nakala/data/11280/2752cdec

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- A. Montoya, J. Benois-Pineau, M. S. Vázquez, A. R. Acosta, K. Guissous and V. Gouet-Brunet, Comparative study of visual saliency maps in the problem of classification of architectural images with deep CNNs, in 2018 Eighth International Conference on Image Processing Theory, Tools and Applications (IPTA), China, 2018.

- Jenny Benois-Pineau, Patrick Le Callet. Visual Content Indexing and Retrieval with Psycho-Visual Models, Eds., Multimedia Systems and Applications book series (MMSA), Springer International Publishing AG, 2017.

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