Supplementary Materials: Human Saliency-Driven Patch-based Matching for Interpretable Post-mortem Iris Recognition

A. Annotation Tool.

Two versions of the Annotation Tool were created for the purpose of this work. The first version, shown in Fig. 1 and used in Step 1 ("Match Evaluation"), collects annotations and decision **without** the knowledge of the outcomes from the previous examiner. The second version, shown in Fig. 2 and in Step 2 ("Match Verification"), collects annotations and decision **with** the outcomes (annotations and decision) from the previous examiner available to the next subject.

B. Additional Annotation Collection Results

Table 1. Numbers of decisions that have been changed in Step 2 by subjects seeing outcomes from the previous examiners.

	Incorrect to Correct	**Correct to Incorrect**
Genuine to Impostor	153	46
Impostor to Genuine	92	109
Unsure to Genuine	27	
Unsure to Impostor	63	
Genuine to Unsure		15
Impostor to Unsure		15

As illustrated in Table 1, more annotators changed their responses from an incorrect decision to a correct decision in the "Match Verification" trials (Step 2) than from correct to incorrect. In addition, three times as many Step 2 annotators changed the previous annotator's decision from unknown to a correct decision, than from a correct decision to unknown.

C. MaskRCNN training configuration

We followed the implementation of MaskRCNN found at `https://github.com/matterport/Mask_RCNN`. The specific values of hyperparameters used in this work are listed in Table 2.

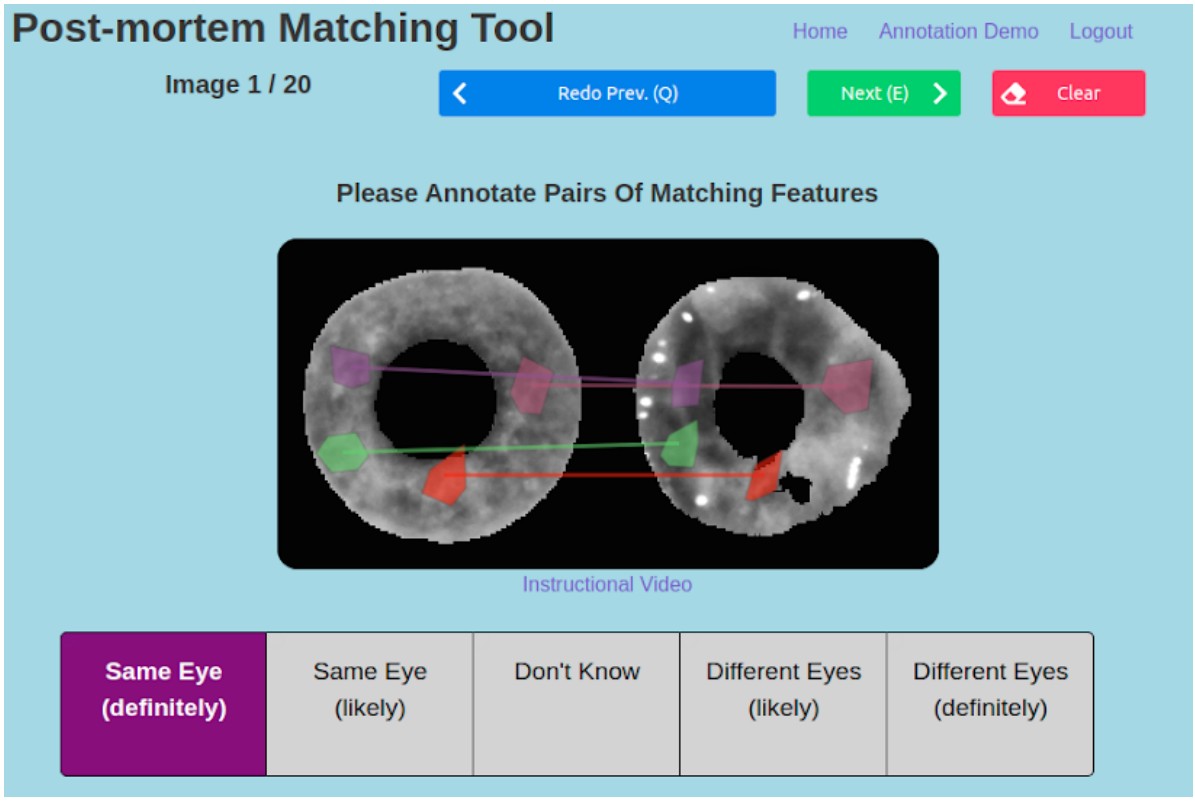

Figure 1. Screen shot of the Annotation Tool used to collect human decisions and annotations in Step 1 (“Match Evaluation”).

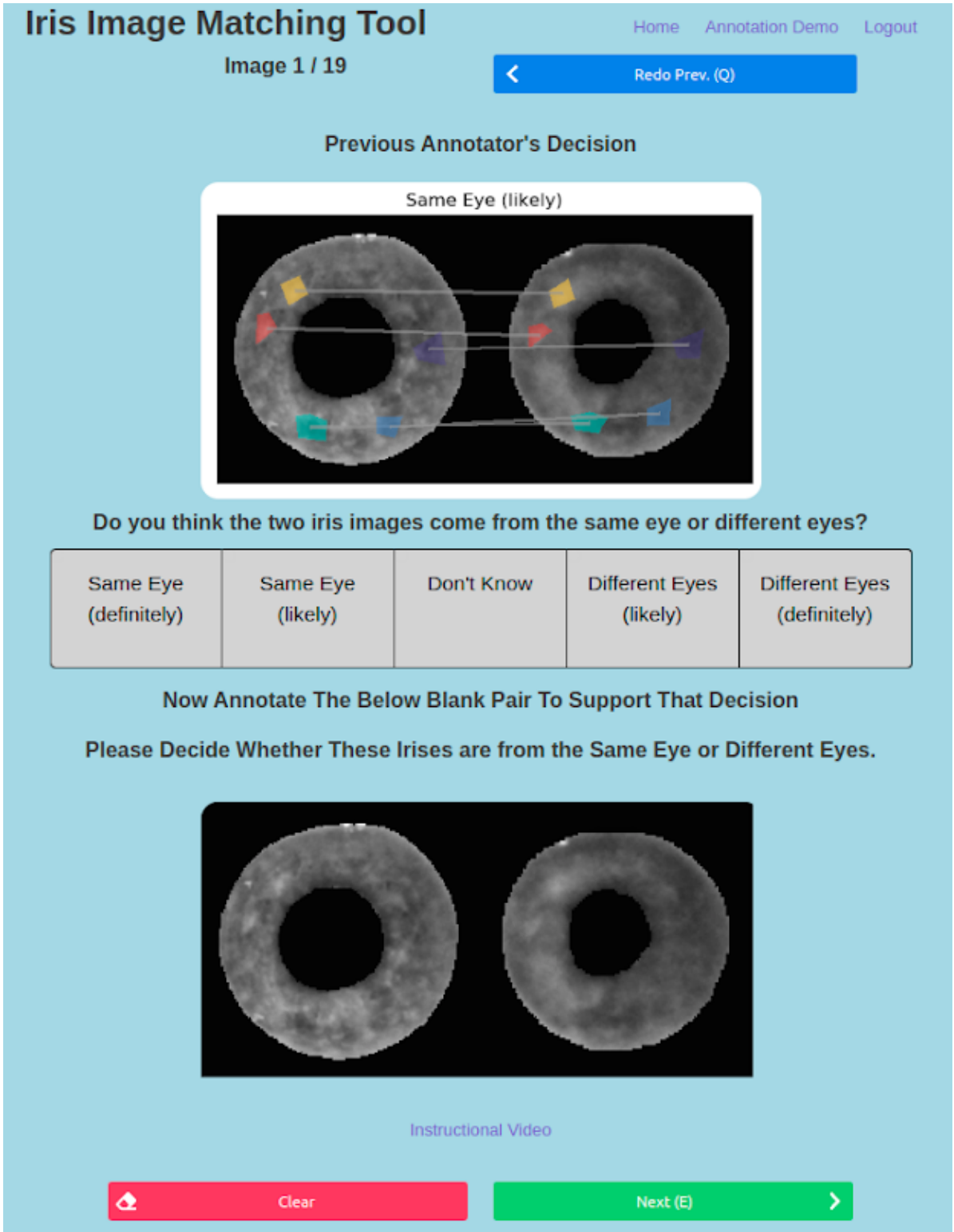

Figure 2. Screen shot of the Annotation Tool used to collect human decisions and annotations in Step 2 (“Match Verification”).

Table 2. Values of the hyperparameters of the Mask RCNN model used in this work.

BACKBONE	resnet50
BACKBONE_STRIDES	[4, 8, 16, 32, 64]
BATCH_SIZE	10
BBOX_STD_DEV	[0.1 0.1 0.2 0.2]
COMPUTE_BACKBONE_SHAPE	None
DETECTION_MAX_INSTANCES	100
DETECTION_MIN_CONFIDENCE	0
DETECTION_NMS_THRESHOLD	0.3
FPN_CLASSIF_FC_LAYERS_SIZE	1024
GPU_COUNT	1
GRADIENT_CLIP_NORM	5.0
IMAGES_PER_GPU	10
IMAGE_CHANNEL_COUNT	3
IMAGE_MAX_DIM	256
IMAGE_META_SIZE	14
IMAGE_MIN_DIM	256
IMAGE_MIN_SCALE	0
IMAGE_RESIZE_MODE	square
IMAGE_SHAPE	[256 256 3]
LEARNING_MOMENTUM	0.9
LEARNING_RATE	0.001
LOSS_WEIGHTS	{'rpn_class_loss': 1.0, 'rpn_bbox_loss': 1.0, 'mrcnn_class_loss': 1.0, 'mrcnn_bbox_loss': 1.0, 'mrcnn_mask_loss': 3.0}
MASK_POOL_SIZE	14
MASK_SHAPE	[28, 28]
MAX_GT_INSTANCES	30
MEAN_PIXEL	[50. 50. 50.]
MINI_MASK_SHAPE	(56, 56)
NAME	iris_feature_finetuned
NUM_CLASSES	2
POOL_SIZE	7
POST_NMS_ROIS_INFERENCE	1000
POST_NMS_ROIS_TRAINING	2000
PRE_NMS_LIMIT	6000
ROI_POSITIVE_RATIO	0.33
RPN_ANCHOR_RATIOS	[0.5, 1, 2]
RPN_ANCHOR_SCALES	(8, 16, 32, 64, 128)
RPN_ANCHOR_STRIDE	1
RPN_BBOX_STD_DEV	[0.1 0.1 0.2 0.2]
RPN_NMS_THRESHOLD	0.9
RPN_TRAIN_ANCHORS_PER_IMAGE	256
STEPS_PER_EPOCH	200
TOP_DOWN_PYRAMID_SIZE	256
TRAIN_BN	False
TRAIN_ROIS_PER_IMAGE	256
USE_MINI_MASK	False
USE_RPN_ROIS	True
VALIDATION_STEPS	100
WEIGHT_DECAY	0.01