

# Interactive Sketch-Driven Image Synthesis

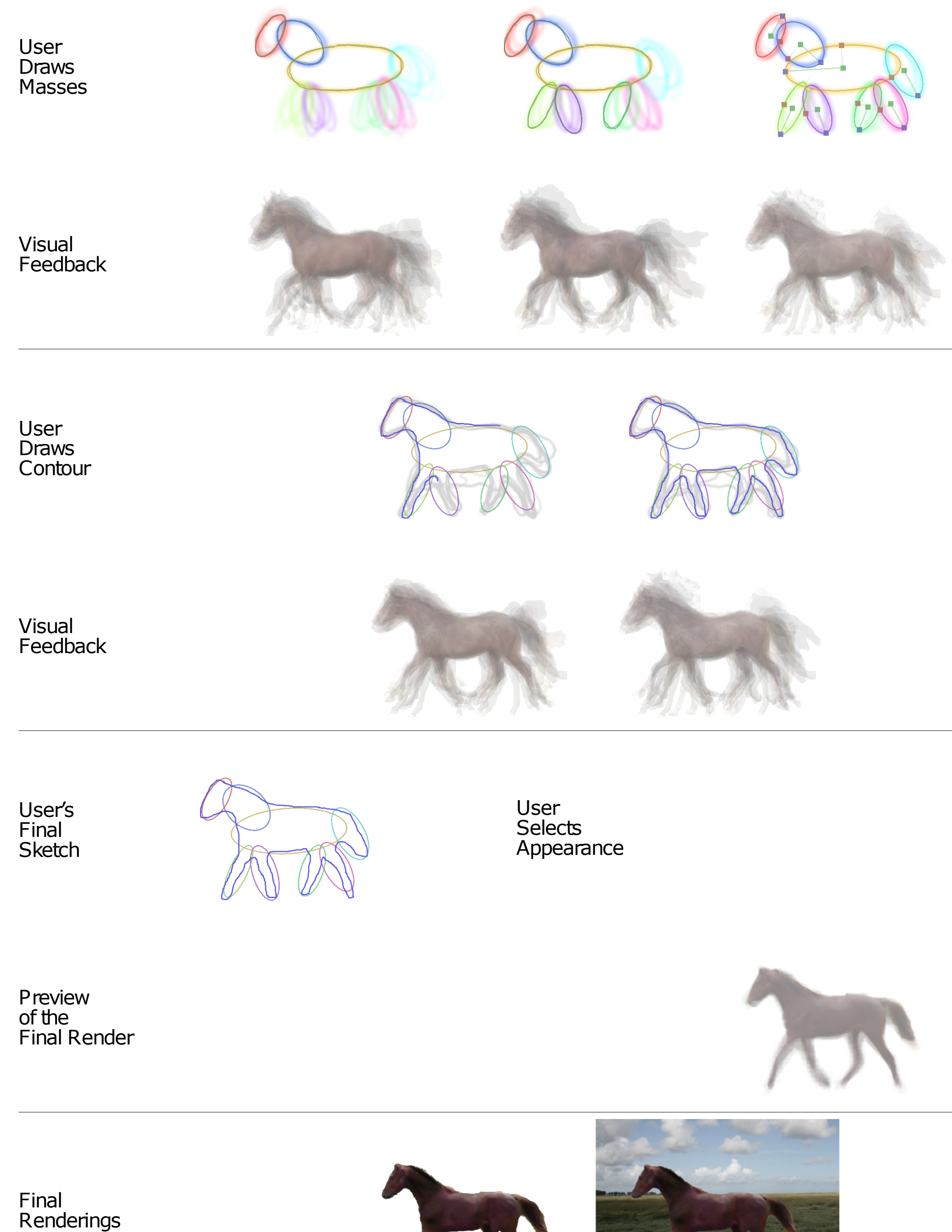
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<http://visual.cs.ucl.ac.uk/pubs/isdis>

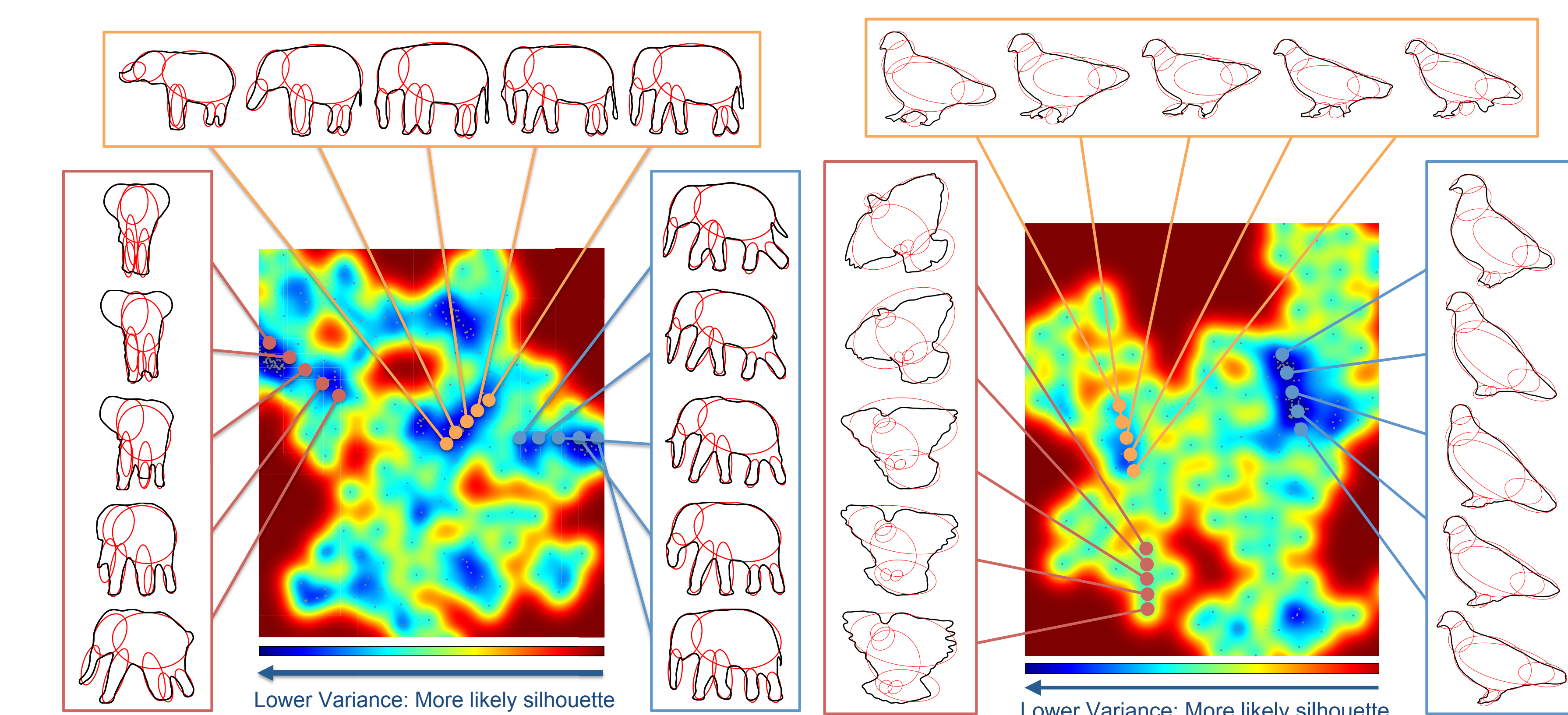
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## Interactive Workflow

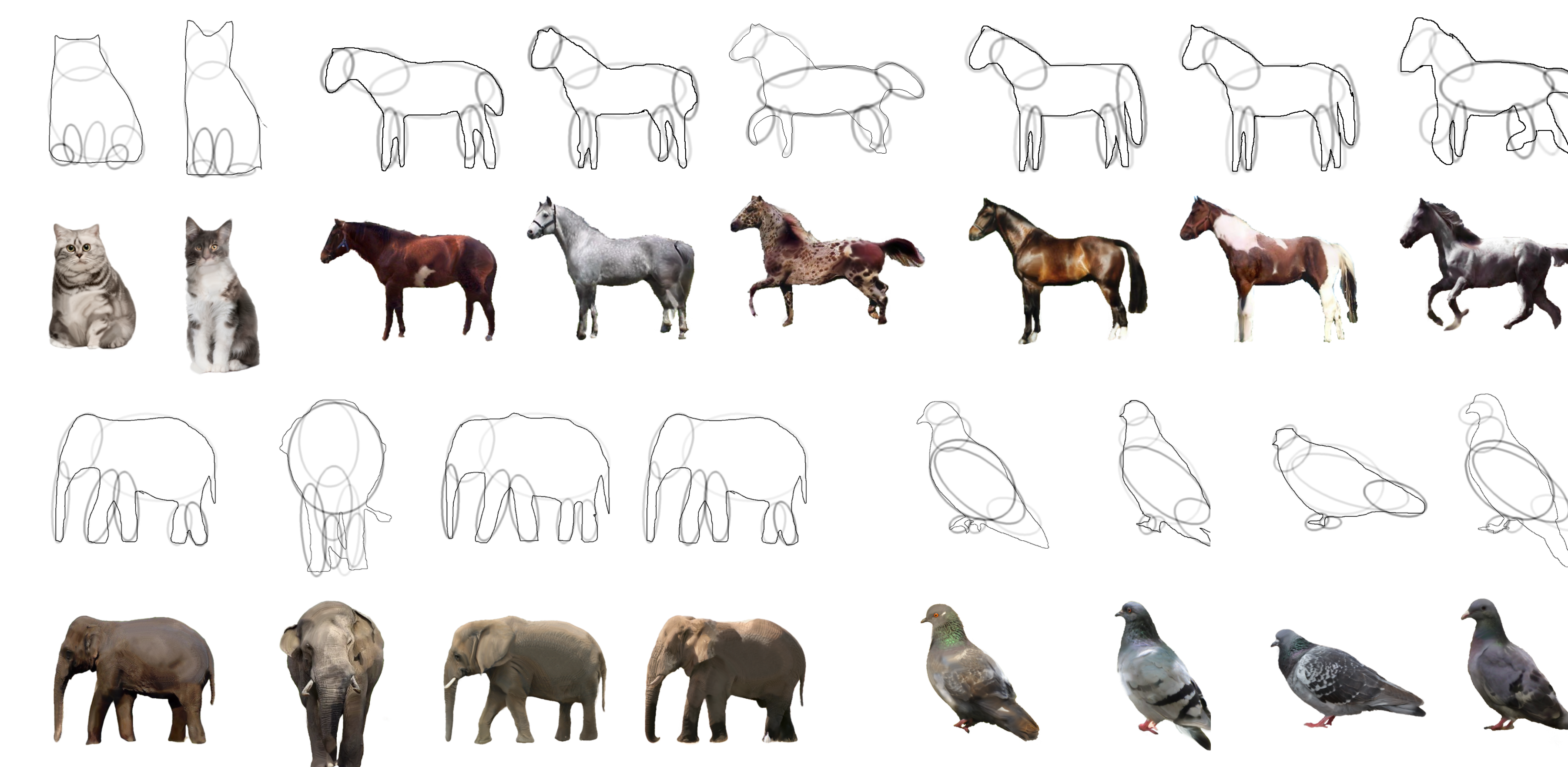


## Joint Manifold



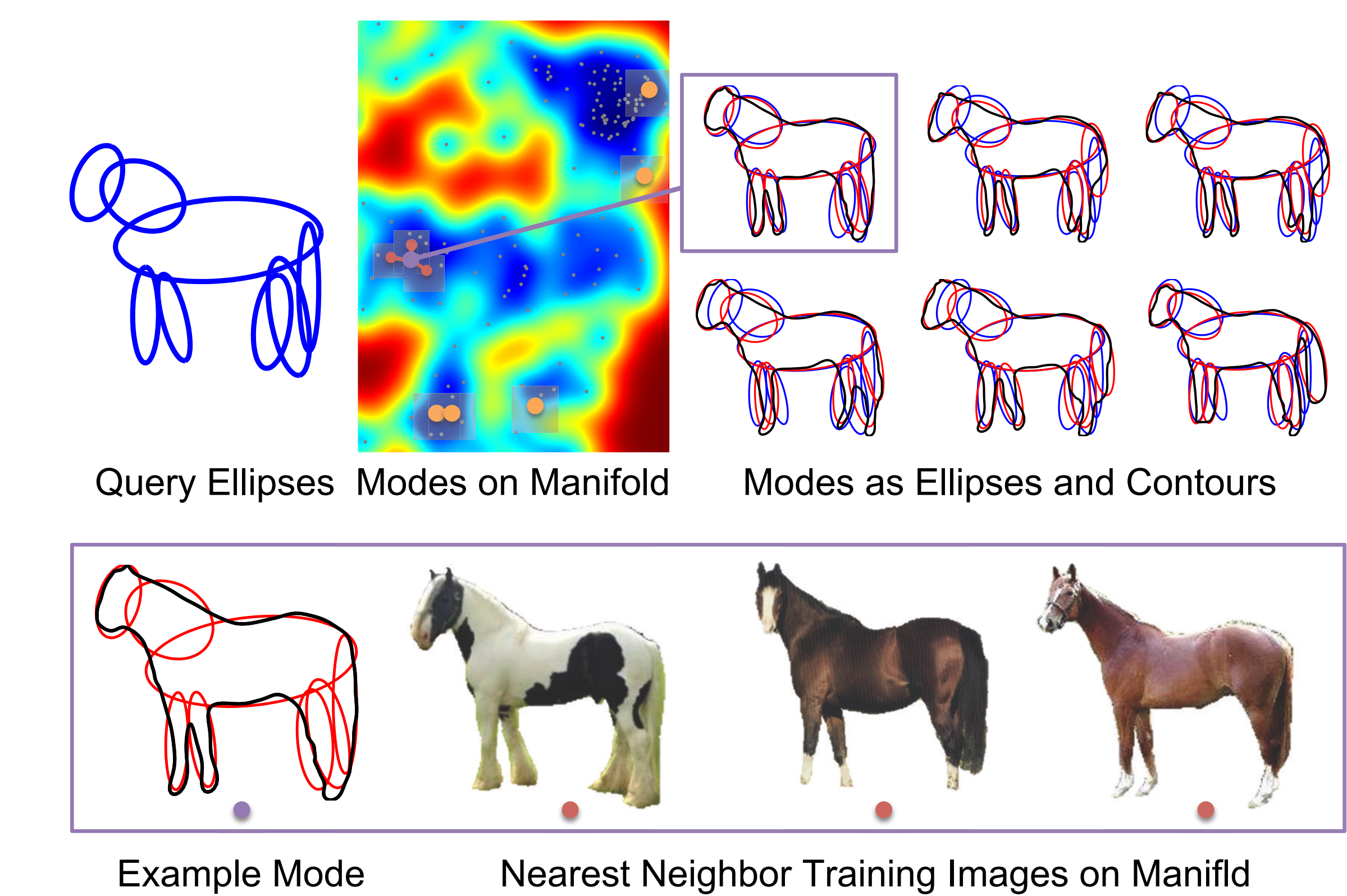
A 2D joint manifold of ellipses and contours learnt for the elephant images and pigeon images. Each point represents a configuration in pose space, and the color indicates the variance of the embedding in the latent space. Regions with a low variance are higher probability in the pose space. The location of the original training images are shown as grey dots.

## Results



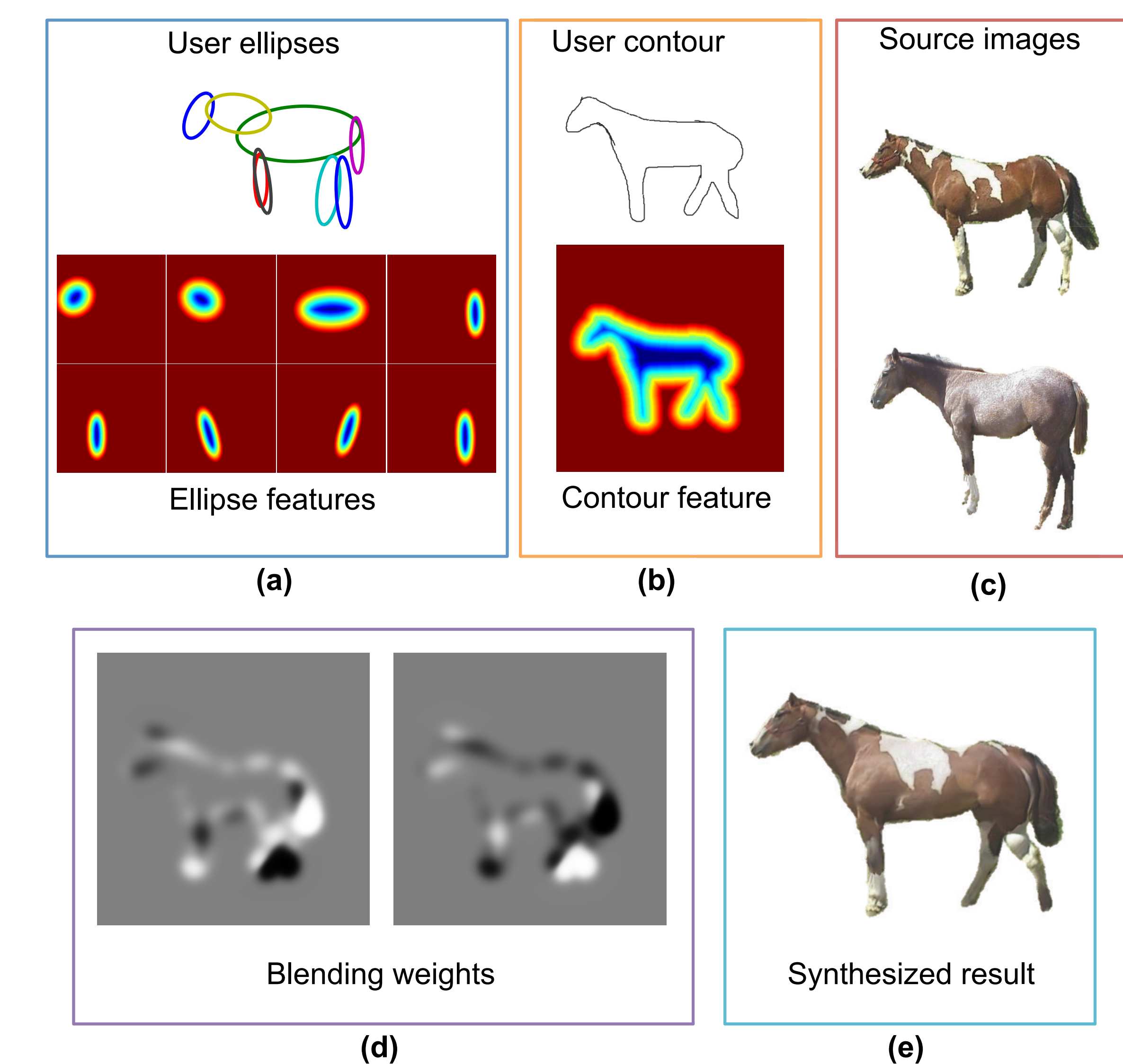
Synthesis results for the horses, elephants, cats and pigeons datasets. We show a variety of results from different image collections, along with the user sketched masses and contours; each of the images is produced by combining training images to match the user's sketch rather than simply retrieving the most similar image from a database. We observe the high quality of the results and their good agreement with the specified masses and contours. We also find a failure case in the top right horse where the user has ignored the shadow contour suggestions and drawn a contour that is inconsistent with the masses for the front legs. This results in a failure in the synthesis due to the incompatible contour constraints and mass features. Please see the supplemental material for details of the nearest neighbor images used for synthesis.

## Sketch Query



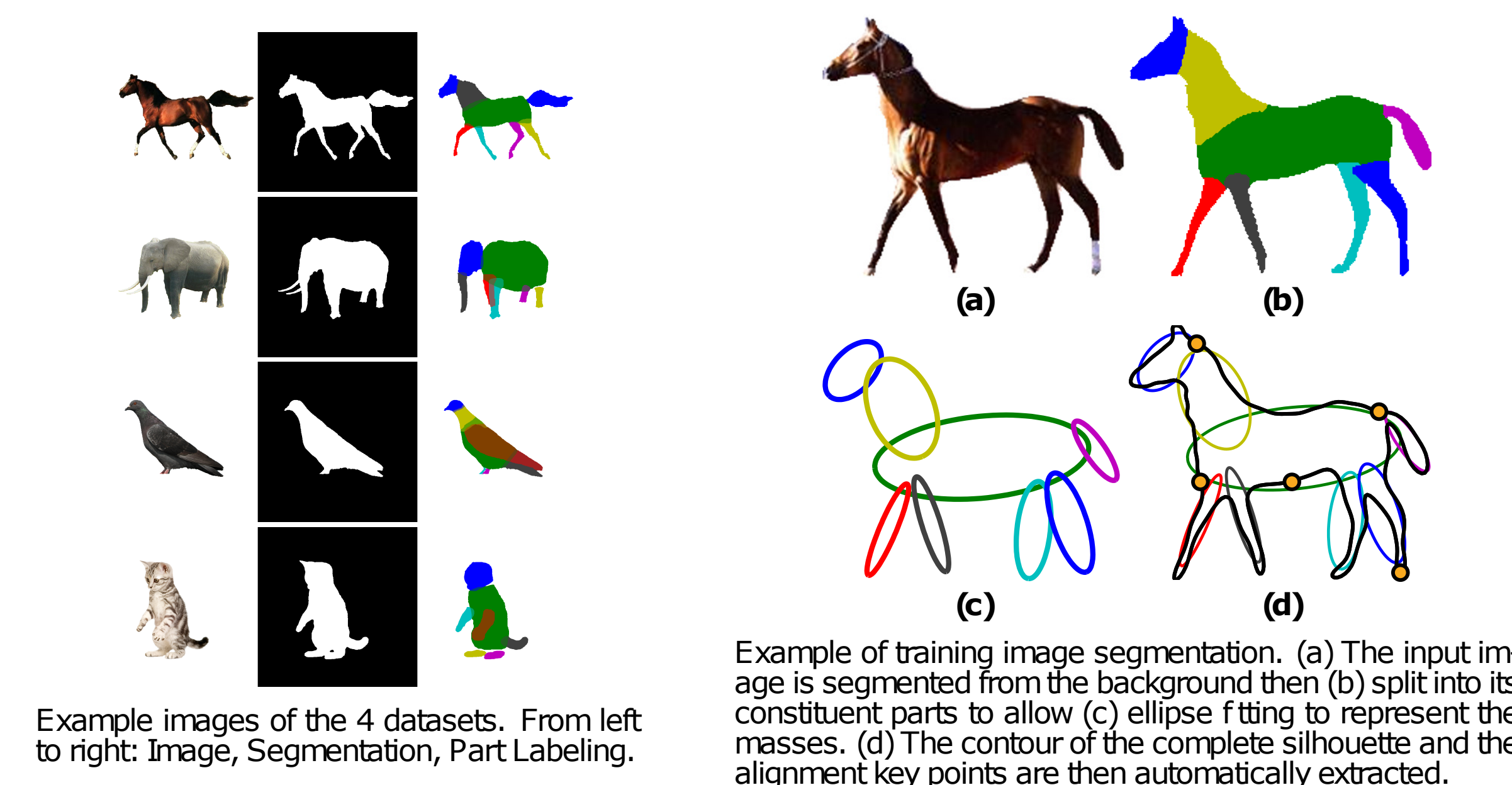
At upper left, a set of user-specified ellipses (shown in blue) is used for a search over pose space (heat map, upper middle). In the upper right, the modes of the distribution are shown in red over the original user specification in blue. At bottom, we show the three training images that are closest in the latent manifold space to the mode marked as a purple dot.

## Image Synthesis: Guided Image Merging



Example synthesis result. (a) The ellipse configuration is used to produce a set of features (one channel per ellipse) that are combined with (b) the feature channel from the contour and (c) the CIE Lab channels of the nearest neighbor source images as an input to synthesis. (d) The blending weights for each image are computed from blurred distances between the source image feature channels and the target feature channels. (e) The synthesized result.

## Data and Labels



Example of training image segmentation. (a) The input image is segmented from the background then (b) split into its constituent parts to allow (c) ellipse fitting to represent the masses. (d) The contour of the complete silhouette and the alignment key points are then automatically extracted.