tween art scholars and computer scientists, and the new hybrid digital connoisseurs, will help this field blossom to its full potential.

Consider the vision or grand challenge for this field illustrated by the task of analyzing and interpreting the artwork in Fig. 1. Imagine some future computer system has access to "big data"—here, all the world's written works on fine art in every language, as well as knowledge of art materials, artists, histories, periods, and digital images of hundreds of millions of artworks (presumably on the web)—but does *not* have prior knowledge about this particular artwork. (This situation might arise if this artwork were recently discovered in some attic and neither attributed nor analyzed.)

Figure 1: Lorenzo Lotto, *Husband and wife* (96 × 116 *cm*), oil on canvas (c. 1543), The State Hermitage Museum, St. Petersburg.

Here is the kind of interpretation or "reading" that shows a sophisticated understanding of the artwork, which currently can be provided only by art scholars. The grand challenge is to design a computer system that provides a reading or interpretation, including simple explanations, as sophisticated as this:

> The color palette, shading, and nature of marks show that this work is a painting—oil on canvas—rather than in another medium, such as watercolor, etching, charcoal, or tempera. It is an interior double portrait

It is a trivial computational task to match such an image to an equivalent one in a database and then retrieve a *human*-generated analysis of this artwork. While that might have practical