An online image management system for anatomy teaching

James F. Brinkley, M.D., Ph. D.[1], Rex Jakobovits, Ph.D.[2]
and Cornelius Rosse, M.D., D.Sc.[1]
Structural Informatics Group, Department of Biological Structure, University of
Washington, Seattle, WA[1] and Vivalog, LLC, Seattle, WA.[2]

Images are an important part of medical education, especially when it comes to learning anatomy. Although many anatomy educators have turned to electronic images for lectures and other educational methods, the images are generally stored on a local workstation or laptop, and are not widely available for sharing. Although commercial image management and sharing tools exist, they are not tailored specifically for the needs of anatomy educators.

We have developed a web-based image management and sharing tool we call the Digital Anatomist Image Collection Manager, http://www9.biostr.washington.edu/repos/image_repo. Using a standard forms-based web browser interface, the tool allows individual authorized users to upload images from their desktop, to index images by concepts such as source, description and anatomical names from our evolving Foundational Model of Anatomy (AMIA 1998, pp 820-824), and to arrange images in collections and sub collections. Regions of interest on images may be annotated using an image annotation tool we previously developed called AnnotateImage (AMIA 2001, pp 403-407), and then uploaded along with the images.

Uploaded image collections may be designated readable or writeable by the public or by specific user groups. On logging in a user can search all image collections available to him or her, copy the results of a query to a personal collection, and add new annotations and index terms to the copied images. Collections may be browsed in a drill-down fashion, moving to sub collections and individual images. Images within a collection may be viewed in different sizes, in slide show mode (for online slide shows) and in interactive atlas mode. In the latter mode the user may click on an annotated region in the image, which causes a new image to be displayed showing the outlined region. The system is implemented in the Web Interfacing Repository Manager toolkit (WIRM, http://www.wirm.org/).

The Image Collection Manager is currently being evaluated for its use in managing teaching images. We have also found that it is useful for sharing research images and slide presentations. A goal is to enhance the tool so that anyone with authorization can upload images and dynamically arrange them in slideshows or atlases similar to the images in our existing Digital Anatomist interactive atlases (http://www9.biostr.washington.edu/da.html).
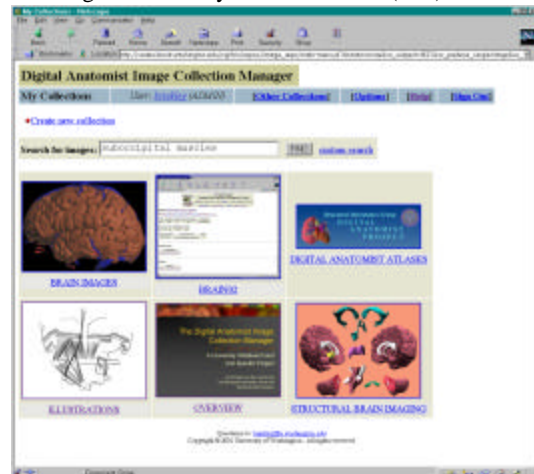
Above. All collections owned by logged-in user
Below. Single image in slide mode, with annotated structure outlined.