



Select Resources for Image-based Humanities Computing

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What follows is by no means a complete bibliography of the rapidly-evolving practice of image-based humanities computing. I have assembled here a list of resources and tools broadly applicable to data visualization and graphical analysis in the liberal arts. Highly technical papers and genre-specific projects have only been indexed when their issues or methodologies illuminate image-based work across the humanities. Readers interested in computer vision and scientific visualization should consult the bibliographies in Section 4. Likewise, while digital imaging in library science and museum conservation is of interest to the humanities scholar, bibliographies and literature reviews for these fields are readily available. I have listed the most complete of these in sections 1 and 4 below. Among software and commercial websites, preference has been given to freely available or open-source applications. I have also included references to seminal works on representation, cognition, and visual semiotics in the hope that this resource list will be useful to researchers new to image theory.

1. Research and Theory
2. Projects and Organizations
3. Software and Companies
4. Bibliographies

1. Research and Theory

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Publishes "the results of high quality theoretical and applied research fundamental to all aspects of image processing and computational vision." Full-text articles online.
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“Creating provocative visual forms and contexts that inform advancements in the process of constructing digital expressions.” (See also other research groups in the MIT Media Lab: <http://www.media.mit.edu/Research/>.)

Visual Computing Laboratory. University of California, San Diego. Available: <http://vision.ucsd.edu/ieeeMultimedia/>.

“We deal with several aspects of visual computing: interactive and immersive video, content-based and similarity-based retrieval in visual information systems, retinal image databases, neuroscience information systems, robotics, vision, and image processing.”

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AHDS. Arts and Humanities Data Service. 2000. Available: <http://ahds.ac.uk>.

“Working on behalf of the academic community to collect, catalogue, manage, preserve and promote the re-use of scholarly digital resources.” (See especially “Guides to Good Practice.” <http://ahds.ac.uk/public/guides.html>.)

Alexander, Kirk and Marilyn Aronberg. *The Piero Project/ECIT: Electronic Compendium of Images and Text*. Princeton University. Available: <http://mondrian.princeton.edu/art430/>.

“The technology is a newly created electronic teaching tool . . . which brings together facts, conceptual materials, visual images, and three-dimensional models in a fully searchable electronic compendium.”

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“Purveyors of the state-of-the-art in document image viewing and storage technology.”
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“We focus on scientific and artistic visualization, high-end computing, and other special applications.”
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“CIIR accomplishments include significant research advances in the areas of distributed information retrieval, information filtering, topic detection, multimedia indexing and retrieval, document image processing, terabyte collections, data mining, summarization, resource discovery, interfaces and visualization, and cross-lingual information retrieval.”
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“We have 36 research and teaching laboratories dedicated to specialized areas of imaging science, including electronic imaging, digital image processing, remote sensing, medical imaging, and color science, optics, and chemical imaging.” See especially “Free Software” and student theses online.
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A collection of image-based electronic editions, with links to other University of Chicago facsimile projects.
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EVL “represents the oldest formal collaboration between engineering and art in the country offering graduate degrees to those specializing in visualization.”

- GRAIL. *GRAIL: Graphics and Imaging Laboratory*. Department of Computer Science and Engineering, University of Washington.
Projects and publications on computer-generated images.
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Active in the "development of new technologies in graphics, visualization and usability, but also in making these innovations meaningful for the average person and easy to use." (See especially the Data Visualization Group.)
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"IATH's goal is to explore and expand the potential of information technology as a tool for humanities research." See especially "Reports, Projects, and Works in Progress."
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See also online abstracts at Visio (<http://www.fl.ulaval.ca/hst/visio/>), the IAVS research journal.
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An interdisciplinary research institute at the University of Northumbria at Newcastle, which aims to "to generate knowledge about how humans seek, perceive, and use images in their professional activities" and to "develop improved software for content-based image retrieval and analysis based on these findings."
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Kiernan, Kevin. *Electronic Beowulf*. Michigan UP. Available: <http://www.uky.edu/~kiernan/eBeowulf/guide.htm>.

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Kirschenbaum, Matthew et al. *The virtual lightbox: an image-based whiteboard for the Web*. 2000. University of Kentucky Center for Computational Sciences. Available: <http://www.rch.uky.edu/~mgk/lightbox/>.

Project to develop a networked environment for collaborative image manipulation and display in realtime.

Krempel, Lothar. *Network Visualization: a gallery of social structures*. Max-Planck-Institut für Gesellschaftsforschung. Available: <http://www.mpi-fg-koeln.mpg.de/~lk/netvis.html>.

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McGann, Jerome. *The Complete Writings and Pictures of Dante Gabriel Rossetti: A Hypermedia Research Archive*. Institute for Advanced Technology in the Humanities. Available: <http://jefferson.village.virginia.edu/rossetti/>.

MMIR. *Multimedia Information Retrieval research group*. Dublin City University. Available: <http://lorca.compapp.dcu.ie/mmir/>.

In addition to textual information management, MMIR has also done “work on retrieving images from a collection based on descriptor captions and on user’s sample sketches.”

MRU. *Multimedia Research Unit*. Institute for Learning and Research Technology, University of Bristol. Available: <http://www.ilrt.bris.ac.uk/>.

Hosts several image-based projects applicable to the humanities, such as TASI (Technical Advisory Service for Images) and ICoS (Image Coding and Segmentation), as well as medical imaging research groups.

MVC. *Manchester Visualization Centre*. Available: <http://www.man.ac.uk/MVC/general/>.

“Undertakes R&D in high-performance and cluster computing, interactive computer graphics, multimedia, image processing and visualization.”

Nowviskie, Bethany. *Swinburne’s 1866 Poems and Ballads: an image-based edition*. Ph.D in progress. University of Virginia. 2001. Available: <http://www.people.virginia.edu/~bnp2f/>.

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Digital facsimiles of documents from Penn's Special Collections Library.
- SCS. *Data Visualization Discussion Group*. 1995. Statistical Consulting Service at York University. Available: <http://www.math.yorku.ca/SCS/DataVis.html>.
Abstracts of talks on "interactive, dynamic graphics, perceptual aspects of data visualization, software [and] computer systems for data visualization [and] graphical methods for specialized types of data."
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- Temporal Modelling Project. 2001. University of Virginia. Available: <http://www.iath.virginia.edu/time>.
An investigation of "time and its representation using digital technology in humanities-based research."
- VADS. *Visual Arts Data Service: providing, preserving, and promoting quality digital resources for the visual arts*. Arts and Humanities Data Service. Available: <http://vads.ahds.ac.uk/>.
Goals: "to build a searchable on-line archive of digital resources and to establish and promote good practice in the creation, management and preservation of digital resources through an advisory, training and publications programme."
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"VISION (Visual Resources Sharing Information Online Network) is a collaborative project of the Visual Resources Association (VRA) and the Research Libraries Group (RLG), with support from the Getty Information Institute. Beginning in late 1997, a group of 32 contributors will create records using a template based on the 'Core Categories for Visual Resources, Version 2.0' to form an RLG testbed database for visual resources."

3. Software and Companies

- Andrienko, Gennady and Nathalia Andrienko. *DESCARTES: Intelligent Mapping and Visual Data Exploration in the WWW* (formerly: "IRIS: a knowledge-based system for visual data exploration"). 1998. Available: <http://allanon.gmd.de/and/java/iris/>.
Java applet. See also <http://allanon.gmd.de/and/html> for related conference papers.

- Bingler, Robert. *Inote: an image annotation tool in Java*. 1998. IATH (Institute for Advanced Technology in the Humanities). Available: <http://www.iath.virginia.edu/inote>.
- Inote "allows the user to attach textual annotations to various regions in an image and then store those annotations and details in a separate text file. It can also generate certain kinds of details automatically by reading the image."*
- Blobworld. *Blobworld: image retrieval using regions*. 2000. Digital Library Project, UC Berkeley. Available: <http://elib.cs.berkeley.edu/photos/blobworld/>.
- "Blobworld is a system for content-based image retrieval. By automatically segmenting each image into regions which roughly correspond to objects or parts of objects, we allow users to query for photographs based on the objects they contain."*
- Brüggemann-Klein, Anne, Rolf Klein and Britta Landgraf. "BibRelEx: exploring bibliographic databases by visualization of annotated content-based relations." *D-Lib Magazine* 5.11 (1999). Available: <http://www.dlib.org/dlib/november99/landgraf/11landgraft.html>.
- DIG. Digital Imaging Group. 2000. Available: <http://www.digitalimaging.org/>.
- "A consortium of leading companies devoted to exploring, developing and implementing new and smarter digital imaging technologies."*
- Davidson, G. et al. "Knowledge mining with VxInsight: discovery through interaction." *Journal of Intelligent Information Systems, Integrating Artificial Intelligence and Database Technologies* 11.3 (1998): 259–285. Available: <http://www.cs.sandia.gov/projects/VxInsight/VxPaper.html>.
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- "We specialize in the development and use of landscape visualization and geographical software, with particular emphasis on its application in Geographical Information Systems (GIS), Mapping, Geography, Geology, Multimedia, 3D simulation, Professional Graphics, Education and Outdoor pursuits."*
- Graham, M. E. and J. P. Eakins. "ARTISAN: a prototype retrieval system for trade mark images." *Vine* 107 (1998): 73–80. Available: <http://www.unn.ac.uk/iidr/papers/vineart/vineart/html>.
- HCIL. Jazz. 1999. Human-Computer Interaction Lab, University of Maryland. Available: <http://www.cs.umd.edu/hcil/jazz/>.
- "Jazz is a revolutionary way to create robust, full-featured graphical applications in Java, with striking features such as zooming and multiple representation."*
- HERON. *HERON: middleware for image retrieval*. Available: <http://HERON.Informatik.Uni-Augsburg.DE/>.
- "The HERON framework merges leading-edge database technology with professional handling of historical images from the humanities."*

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Iconographic classification system providing "subject access to visual documents."
- LizardTech. 2000. Available: <http://www.lizardtech.com/index.pl>.
"LizardTech develops the technology and software that simplifies and enhances the distribution, management and control of digital images."
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Commercial java client for image browsing, search, and manipulation. In use at the David Rumsey Cartography Collection: <http://www.davidrumsey.com/>.
- Octavo. *Digital Rare Books*. 2001. Available: <http://www.octavo.com>.
Searchable facsimile editions produced using Adobe Acrobat software.
- OpenDX: the open source software project based on IBM's Visualization Data Explorer*. 2000. OpenDX.org. Available: <http://www.opendx.org/>.
"A general-purpose software package for data visualization and analysis. It employs a data-flow driven client-server execution model and provides a graphical program editor that allows the user to create a visualization using a point and click interface."
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"Thinkmap tools animate and display complex sets of interrelated information, creating interfaces that transform data into insight and knowledge." See Plumb Design's Visual Thesaurus at <http://www.plumbdesign.com/thesaurus/>.
- QBIC-IBM's Query by Image Content*. IBM Corporation. Available: <http://www.qbic.almaden.ibm.com/~qbic/>.
"Make queries of large image databases based on visual image content – properties such as color percentages, color layout, and textures occurring in the images." Shareware download.
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- Virage. *Virage products and services*. 2000. Available: <http://www.virage.com/products/index.html>.
Commercial products for the real-time content indexing of video, audio, and digital images.
- Yen, Chihsing. "VisualNet: visual reasoner for information retrieval." Ph.D. Pittsburgh UP, 1989.
- Young, Forrest W. *ViSta: the visual statistics system*. 1999. Department of Psychology, UNC Chapel Hill. Available: <http://forrest.psych.unc.edu/research/index.html>.

Open source software which “features statistical visualizations that are highly dynamic and very interactive.”

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“A central location for World Wide Web links relating to computer vision research.”
- Imaging Information.* 1999. Berkeley Digital Library SunSITE. Available: <http://sunsite.berkeley.edu/Imaging/>.
Resources for digital imaging, including links to projects, companies, and tools.
- Digital Image Database Projects.* 2000. Vassar College Libraries. Available: http://iberia.vassar.edu/vcl/electronics/etc/reference/image_databases.html.
A small bibliography of projects, guidelines, and tools.
- Achilles, Alf-Christian. *Bibliographies on computer graphics and vision.* 2000. Computer Science Bibliography Collections.
Searchable index of bibliographical references to approximately 60,000 papers on graphics and vision.
- Besser, Howard and Rebecca Kamp. *Image Database Bibliography.* 1996. Available: <http://sunsite.berkeley.edu/Imaging/Databases/Bibliography/>.
Extensive bibliography, but not updated since 1996.
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Searchable archives of IMAGELIB, an online directory of image databases, and “technical and descriptive information about imaging projects.”
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Useful collection of data visualization links.
- NASA. *Scientific Visualization Sites.* Numerical Aerospace Simulation Facility at NASA Ames Research Center.
An annotated bibliography of university, government, commercial, and military visualization sites.

Price, Keith. *Annotated computer vision bibliography*. 2000. University of South Carolina Institute for Robotics and Intelligent Systems. Available: <http://iris.usc.edu/Vision-Notes/bibliography/contents/html>.

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Sonesson, Göran. "A bibliography of pictorial and other kinds of visual semiotics." Department of Cultural Semiotics, Lund University, Sweden. Available: <http://www.fl.ulaval.ca/hst/viso/biblio.htm>.

VisInfo. *Information Services for Scientific Visualization*. Konrad-Zuse-Zentrum für Informationstechnik, Berlin. Available: <http://visinfo.zib.de/>.

"The aim of the VisInfo project is to provide a collection of domain specific information services for scientific visualization and computer graphics."

Includes a searchable library of technical research.

